Fig.1

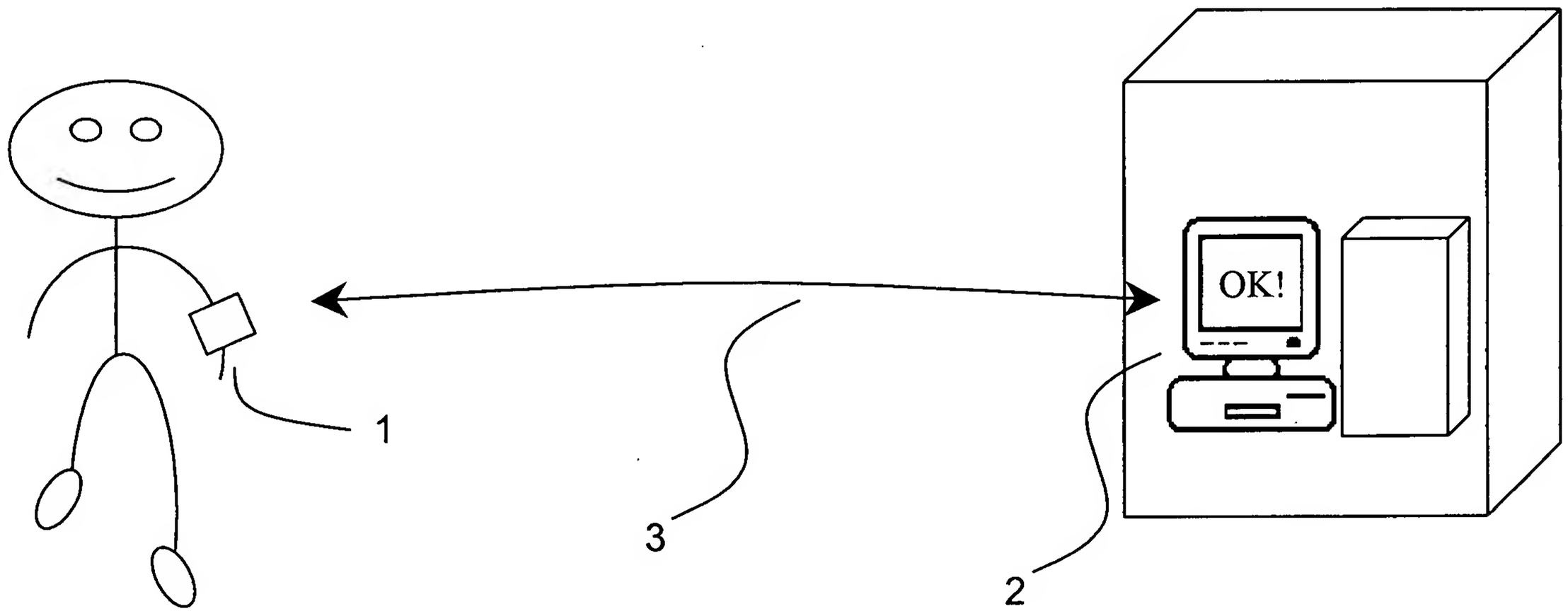


Fig.2

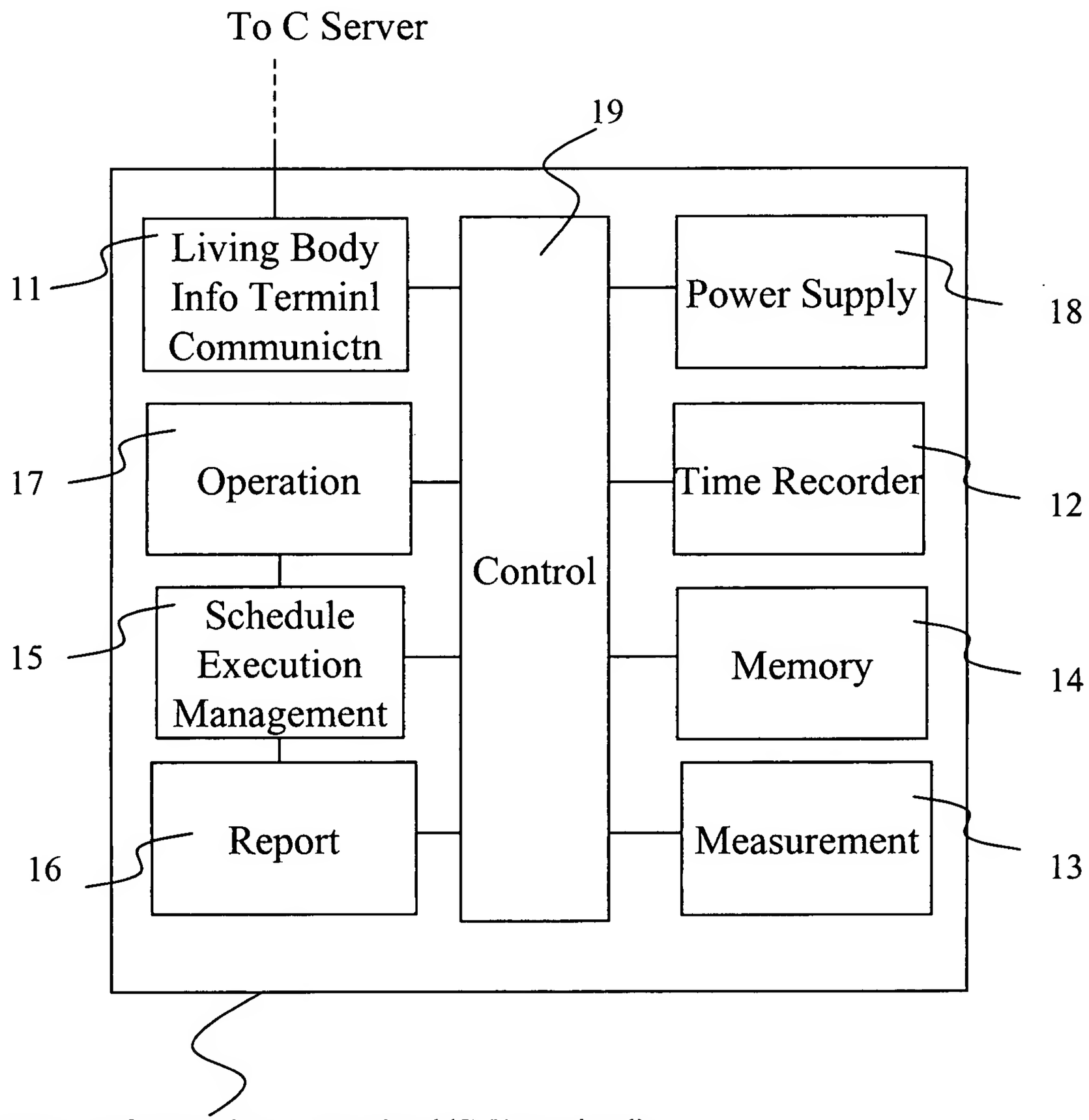

To C Server
19
11
Living Body
Info Terminl
Communictn
Power Supply
18
17
Operation
Time Recorder
12
Control
15
Schedule
Execution
Management
Memory
14
16
Report
Measurement
13
1 Living Body Information Terminal(S Terminal)

Fig.3

(a)
Uer_ID,S Terminal,STD

Action Table Information

Task No.	Termnl ID	Execution time/ trig. condtn	Action	Duration	Execution Result
1	UDE	12:00	Lunch alarm:Have lunch	120	OK/NG
2	UDE	Tas No1=30 min. after OK	Medication alarm:Take medicine	30	OK/NG
3	UDE	Task No2=30 min. after OK	Pulse alarm:Measure pulse	30	DATA/NG
4	UDE	Every 30 mins.	Automatic Measurement:Pulse	-	DATA
…	…	…	…	…	…

(b)
Uer_ID,S Terminal,S_e1

Task No.	Termin l ID	Execution time/ trig. condtn	Action	Duration	Execution Result
1	UDE	Every 5 min.	Automatic Measurement:Pulse	-	DATA
2	UDE	Continuous	Alarm:Have lunch	60	OK/NG
…	…	…	…	…	…

(c)
Uer_ID,S Terminal,S_e2

Task No.	Termnl ID	Execution time/ trig. condtn	Action	Duration	Execution Result
1	UDE	Every 10 min.	Automatic Measurement:Pulse	-	DATA
2	UDE	Continuous	Alarm:Take medicine	60	OK/NG
…	…	…	…	…	…

(d) Judgment Table Information

Action	Execution Result	Judgment
Alarm:Lunch	OK	Send log to C
	NG	Change Table _S_e1 Send log to_C
Alarm:Medicine	OK	Send log to _C
	NG	Change Table S_e2 Send log to _C
Alarm:Pulse	DATA>150 DATA<50 NG	Request for judge_C Send log to_C
	50<DATA<150	Send log to C
Automatic Measurement:Pulse	DATA>150 DATA<50 NG	Request for Judge_C Send log to_C
	50<DATA<150	Send log to C
Alarm:***	OK	Send log to_C
	NG	Send log to C Request for judgment C
…	…	…

Fig.4

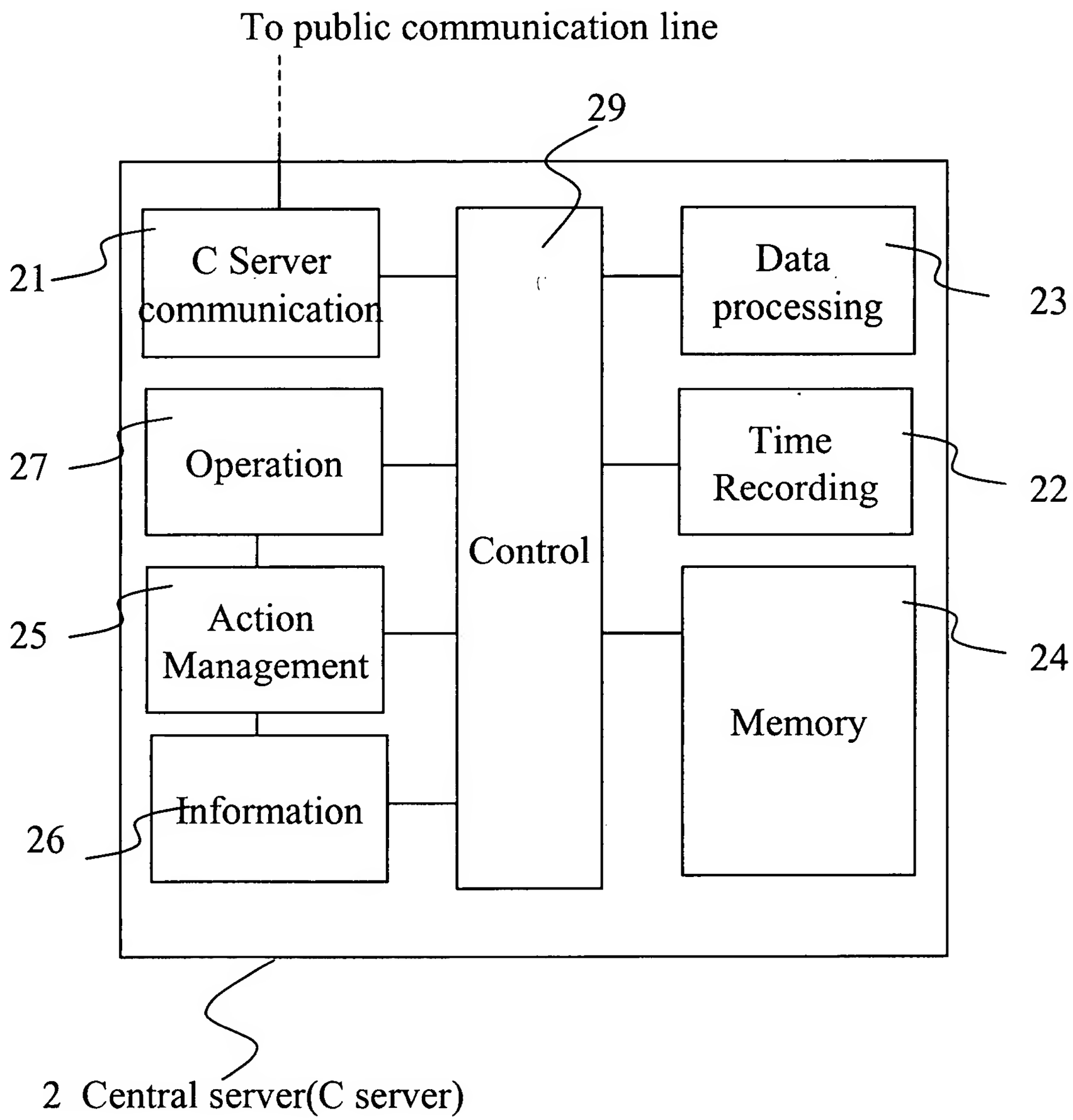

To public communication line
29
21
C Server communication
Data processing
23
27
Operation
Time Recording
22
Control
25
Action Management
Memory
24
26
Information
2 Central server(C server)

Fig.5

(a)
CServer,STD

Action Table Information

Task No.	Execution time/ trig. condtn	Action	Duration	Execution Result
1	*	Store	-	OK/NG
2	*	Transmission condition	-	OK/NG
3	24:00	Diagnose		JUDGE
4	*	Receive request	-	JUDGE
5	Month's 1st day	Make a report	-	OK/NG
…	…	…	…	…

(b)
C Server,C_e1

Task No.	Execution time/ trig. condtn	Action	Duration	Execution Result
1	continuous	Contins connectn & diagnose with particular user s termnal	Continuo us	DATA
…	…	…	…	…

(c)
C Server, Uer_ID,C_S_e1

taskNo.	Device ID	Execution time/ trig. condtn	Action	Duration	Execution Result
1	UDE	Every min.	Automatic mesurmnt:Pulse	-	DATA
2	UDE	Continuous	ALARM_Phone Now!!	10	OK/NG
…	…	…	…	…	…

(d) Judgment Table Information

Action	Execution Result	Judgment
Store	OK	-
	NG	Retry
Transmit conditions	OK	-
	NG	Retry
Diagnose	<Calculate conditon> Condtn = Good Condtn = Fair Condtn = Normal	Store diagnostic result
	Condtn = Medicr Condtn = Bad	Store diagnostic result Request to phone operatr
Receive request	<Alarm: Pulse> <Auto pulse msrmnt> Condtn = Good Condtn = Fair Condtn = Normal	Store data OKData Transmi to S
	Condtn = Medicr Condtn = Bad	Store Data Request to phone operatr Change table_C_e1 Change table_C_S_e1
	<Alarm_***>	Store data request to phone operatr
Make a report	OK	-
	NG	Retry
…	…	…

Fig.6

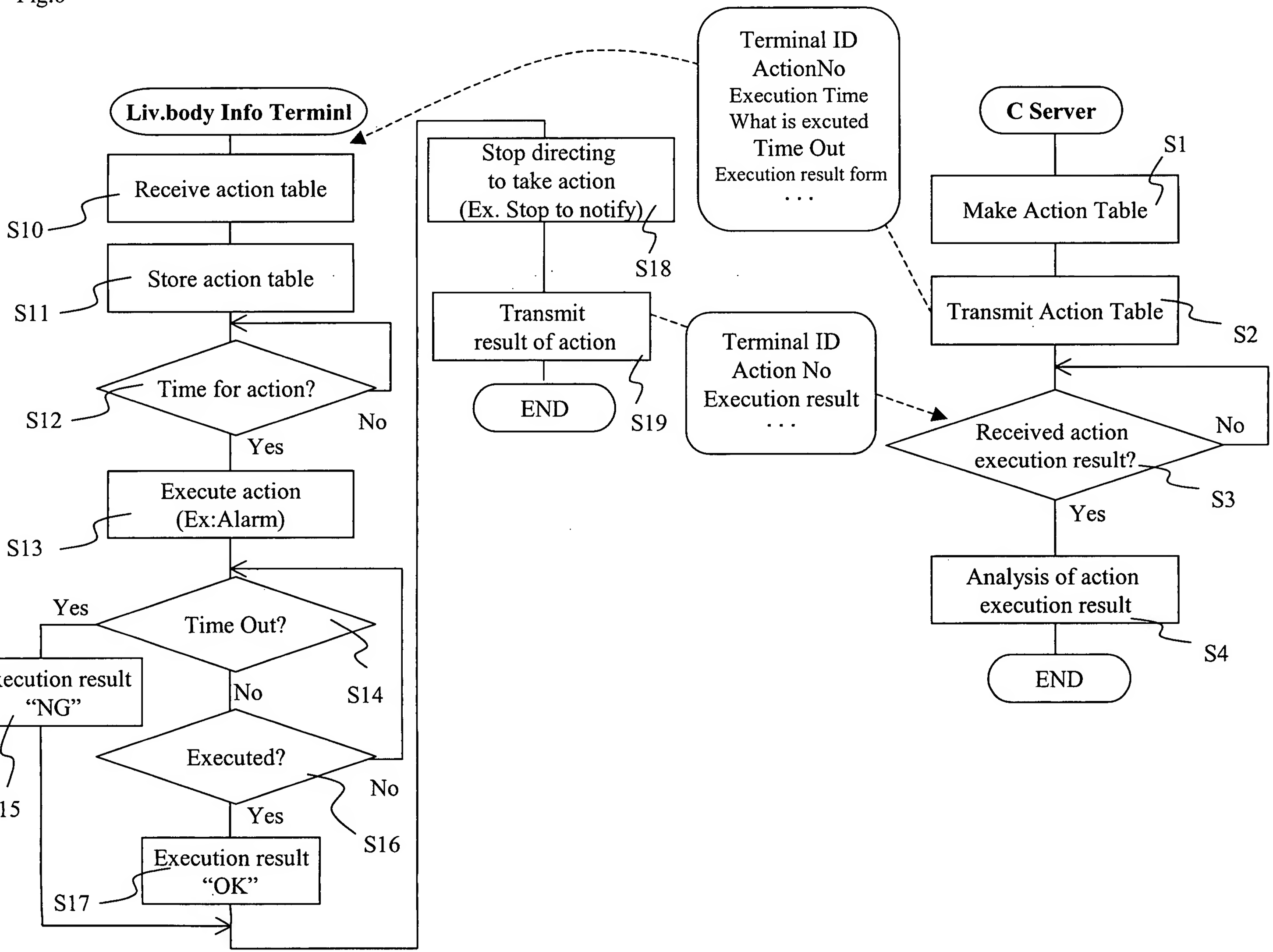

Liv.body Info Terminl
Receive action table
S10
Store action table
S11
Time for action?
S12
No
Yes
Execute action
(Ex:Alarm)
S13
Yes
Time Out?
S14
No
Execution result
"NG"
S15
Executed?
No
S16
Yes
Execution result
"OK"
S17
Stop directing
to take action
(Ex. Stop to notify)
S18
Transmit
result of action
END
S19
Terminal ID
ActionNo
Execution Time
What is excuted
Time Out
Execution result form
. . .
Terminal ID
Action No
Execution result
. . .
C Server
Make Action Table
S1
Transmit Action Table
S2
Received action
execution result?
No
S3
Yes
Analysis of action
execution result
S4
END

Fig.7

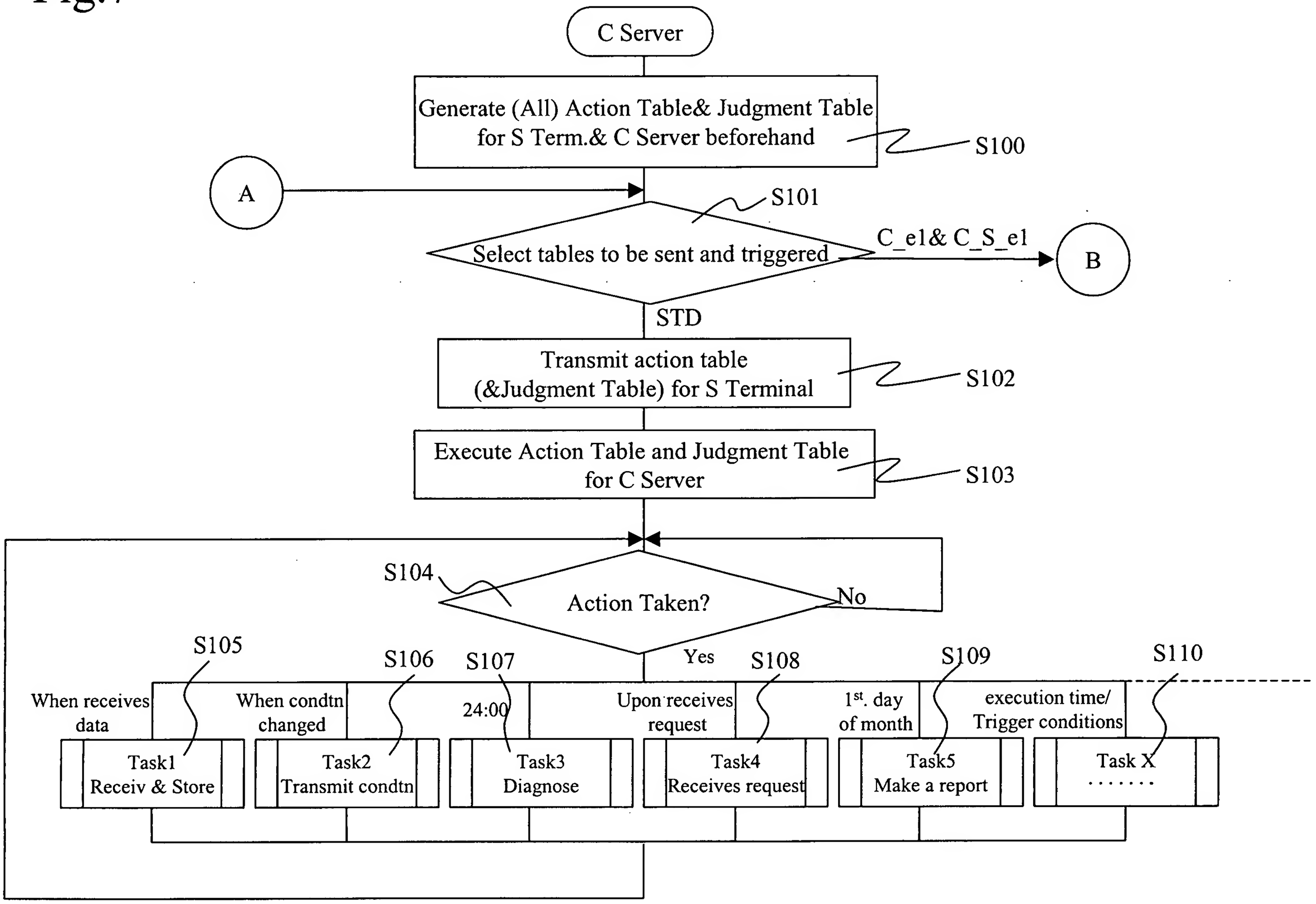

C Server
Generate (All) Action Table& Judgment Table for S Term.& C Server beforehand
S100
A
S101
Select tables to be sent and triggered
C_e1& C_S_e1
B
STD
Transmit action table (&Judgment Table) for S Terminal
S102
Execute Action Table and Judgment Table for C Server
S103
S104
Action Taken?
No
Yes
S105
S106
S107
S108
S109
S110
When receives data
When condtn changed
24:00
Upon receives request
1st. day of month
execution time/ Trigger conditions
Task1 Receiv & Store
Task2 Transmit condtn
Task3 Diagnose
Task4 Receives request
Task5 Make a report
Task X
.....

Fig8

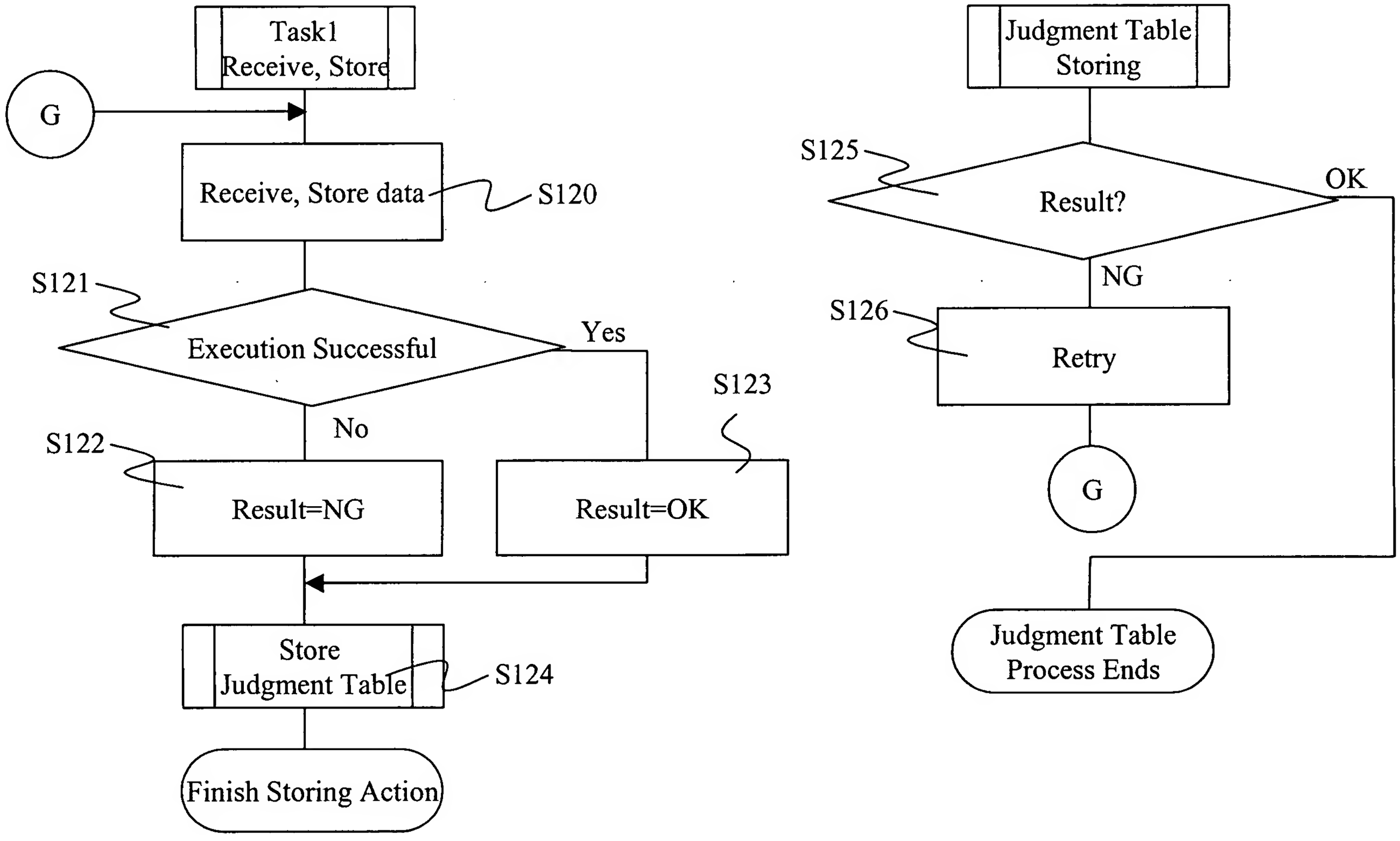

Task1
Receive, Store
G
Receive, Store data
S120
S121
Execution Successful
Yes
No
S122
Result=NG
S123
Result=OK
Store
Judgment Table
S124
Finish Storing Action
Judgment Table
Storing
S125
Result?
OK
NG
S126
Retry
G
Judgment Table
Process Ends

Fig.9

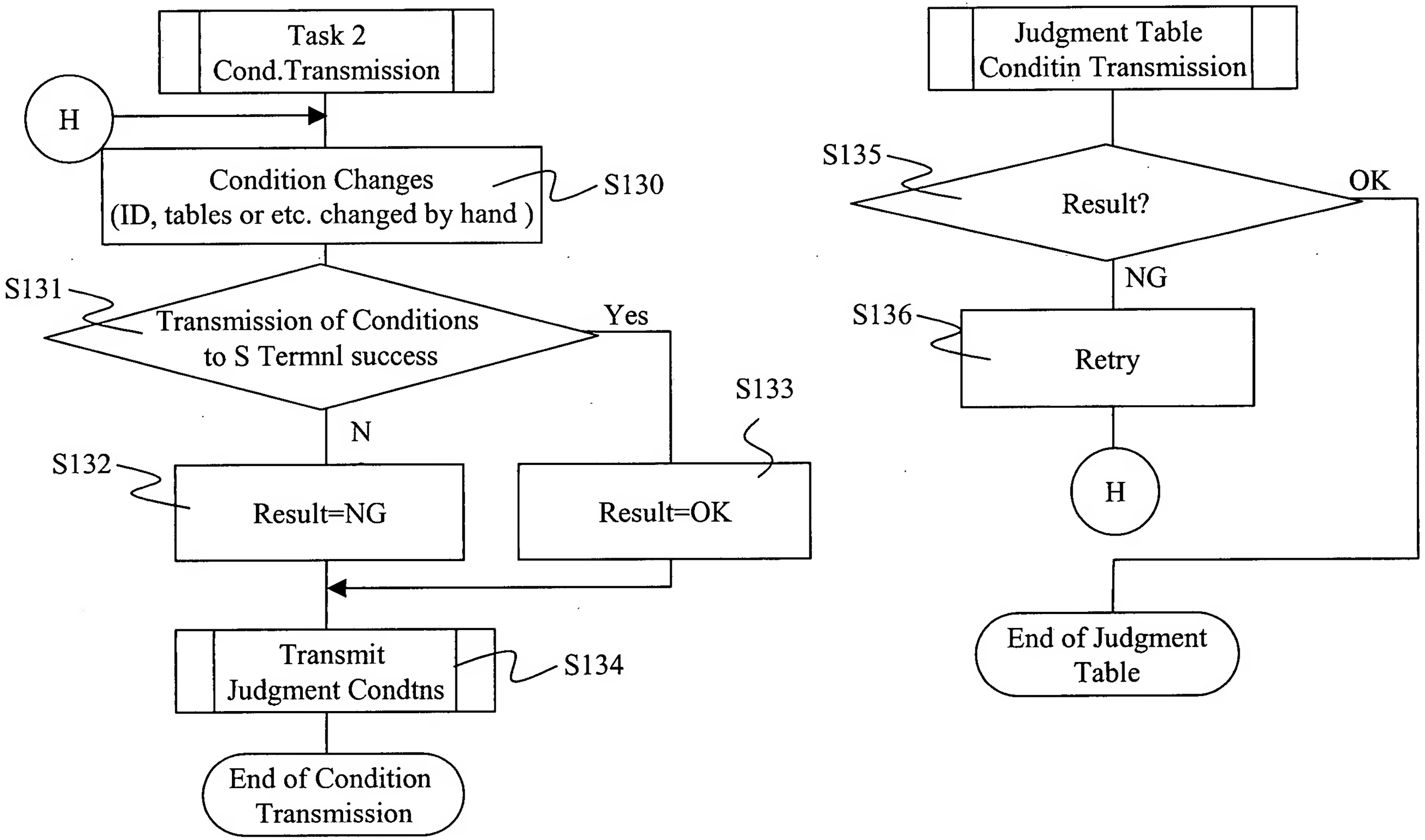

Task 2
Cond.Transmission
H
Condition Changes
(ID, tables or etc. changed by hand)
S130
S131
Transmission of Conditions
to S Termnl success
Yes
N
S132
Result=NG
S133
Result=OK
Transmit
Judgment Condtns
S134
End of Condition
Transmission
Judgment Table
Conditin Transmission
S135
Result?
OK
NG
S136
Retry
H
End of Judgment
Table

Fig.10

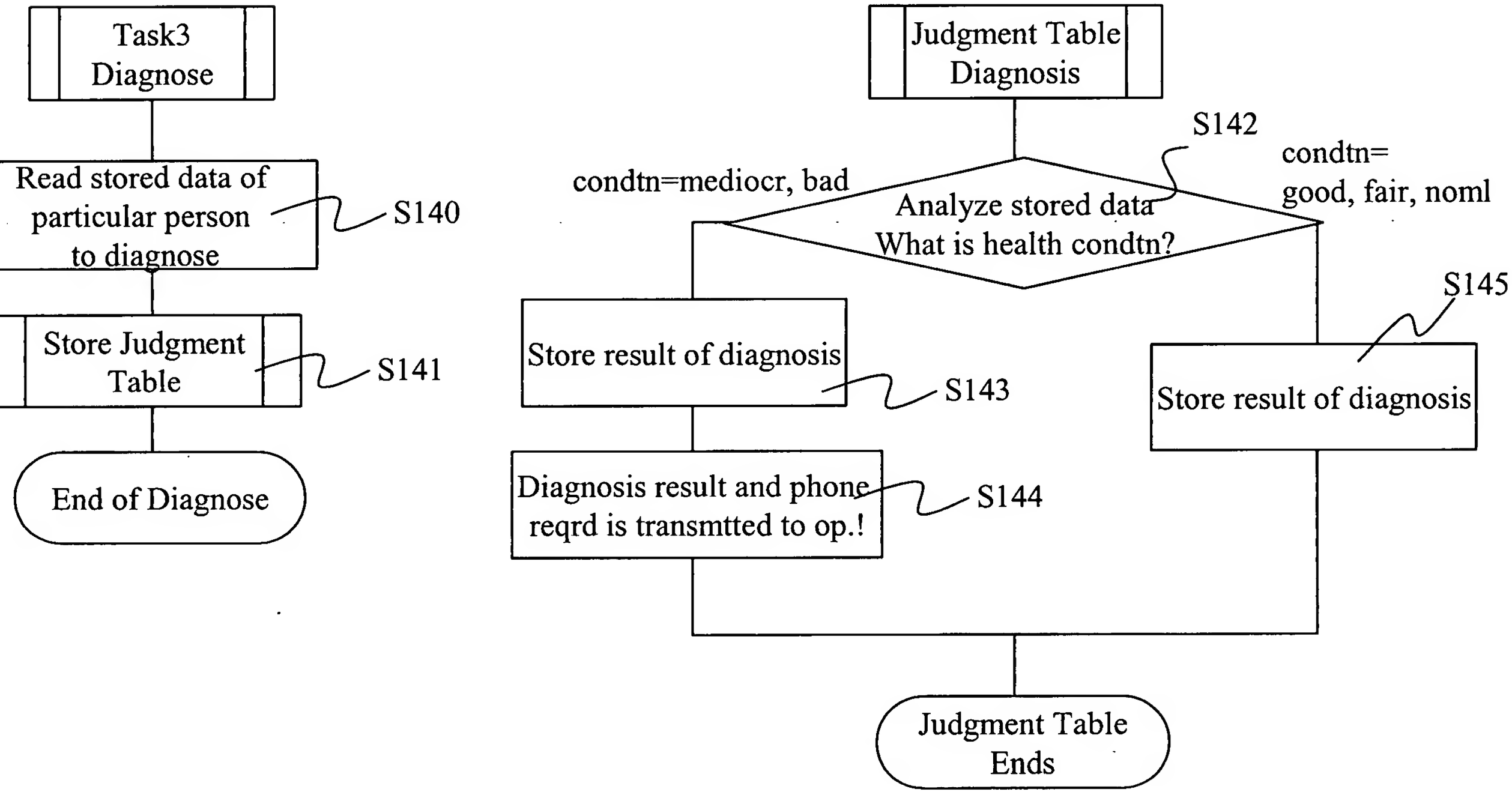

Task3
Diagnose
Read stored data of particular person to diagnose
S140
Store Judgment Table
S141
End of Diagnose
Judgment Table Diagnosis
S142
condtn=mediocr, bad
Analyze stored data What is health condtn?
condtn= good, fair, noml
Store result of diagnosis
S143
Diagnosis result and phone reqrd is transmtted to op.!
S144
S145
Store result of diagnosis
Judgment Table Ends

Fig.11

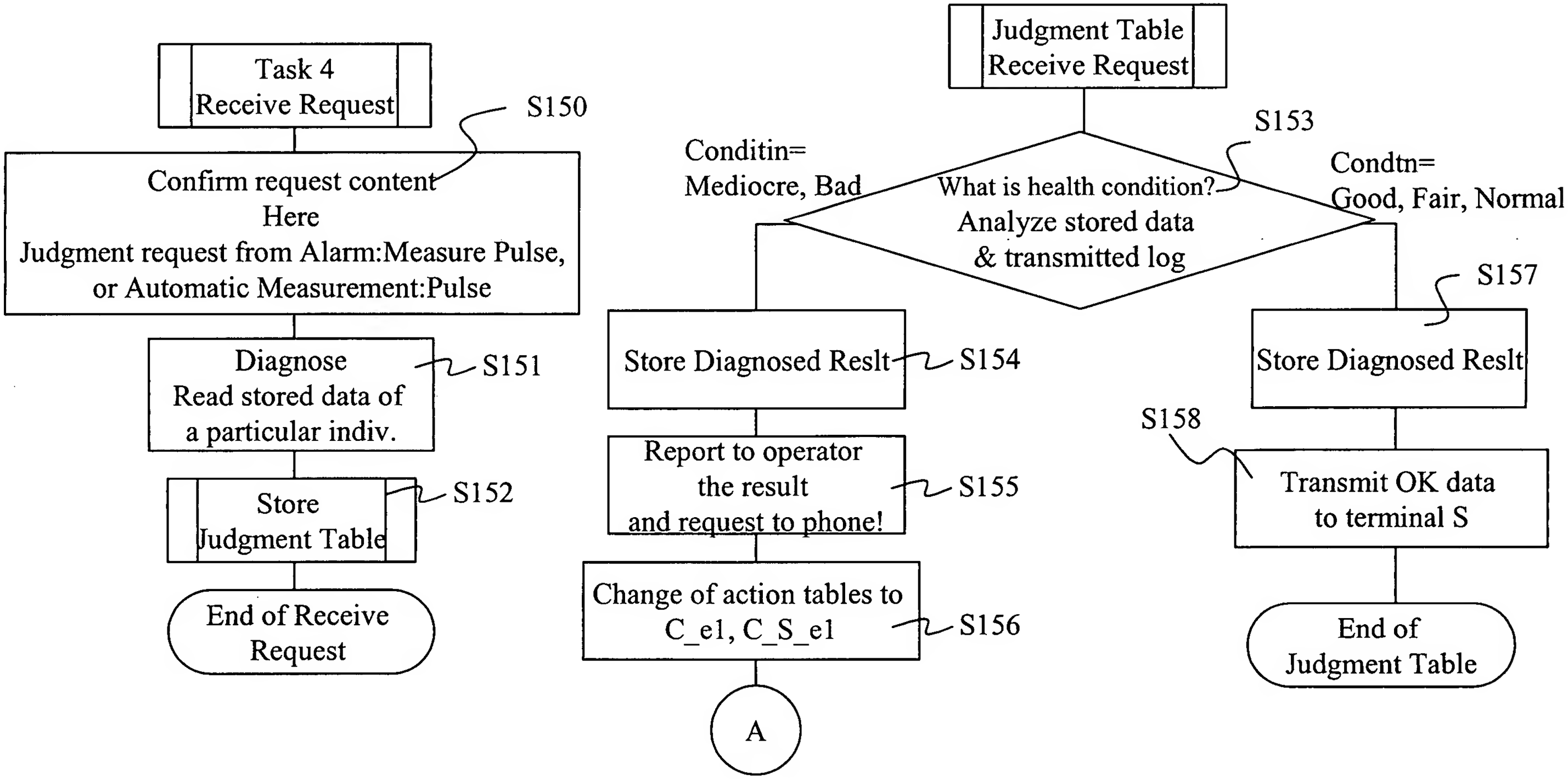

Task 4
Receive Request
S150
Confirm request content
Here
Judgment request from Alarm:Measure Pulse,
or Automatic Measurement:Pulse
Diagnose
Read stored data of
a particular indiv.
S151
Store
Judgment Table
S152
End of Receive
Request
Judgment Table
Receive Request
S153
Conditin=
Mediocre, Bad
What is health condition?
Analyze stored data
& transmitted log
Condtn=
Good, Fair, Normal
Store Diagnosed Reslt
S154
Report to operator
the result
and request to phone!
S155
Change of action tables to
C_e1, C_S_e1
S156
A
S157
Store Diagnosed Reslt
S158
Transmit OK data
to terminal S
End of
Judgment Table

Fig.12

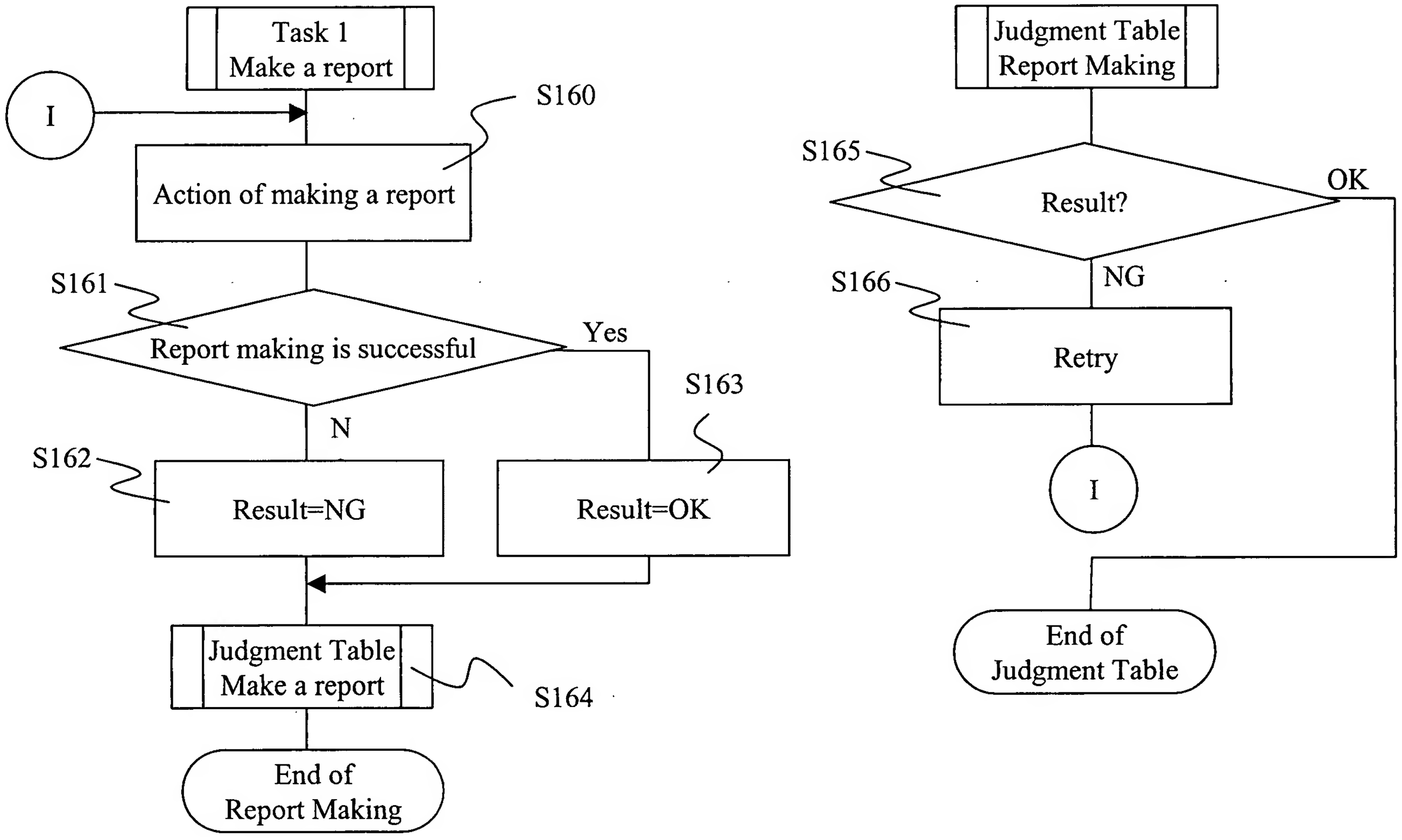

Task 1
Make a report
I
S160
Action of making a report
S161
Report making is successful
Yes
N
S163
S162
Result=NG
Result=OK
Judgment Table
Make a report
S164
End of
Report Making
Judgment Table
Report Making
S165
Result?
OK
NG
S166
Retry
I
End of
Judgment Table

Fig.13

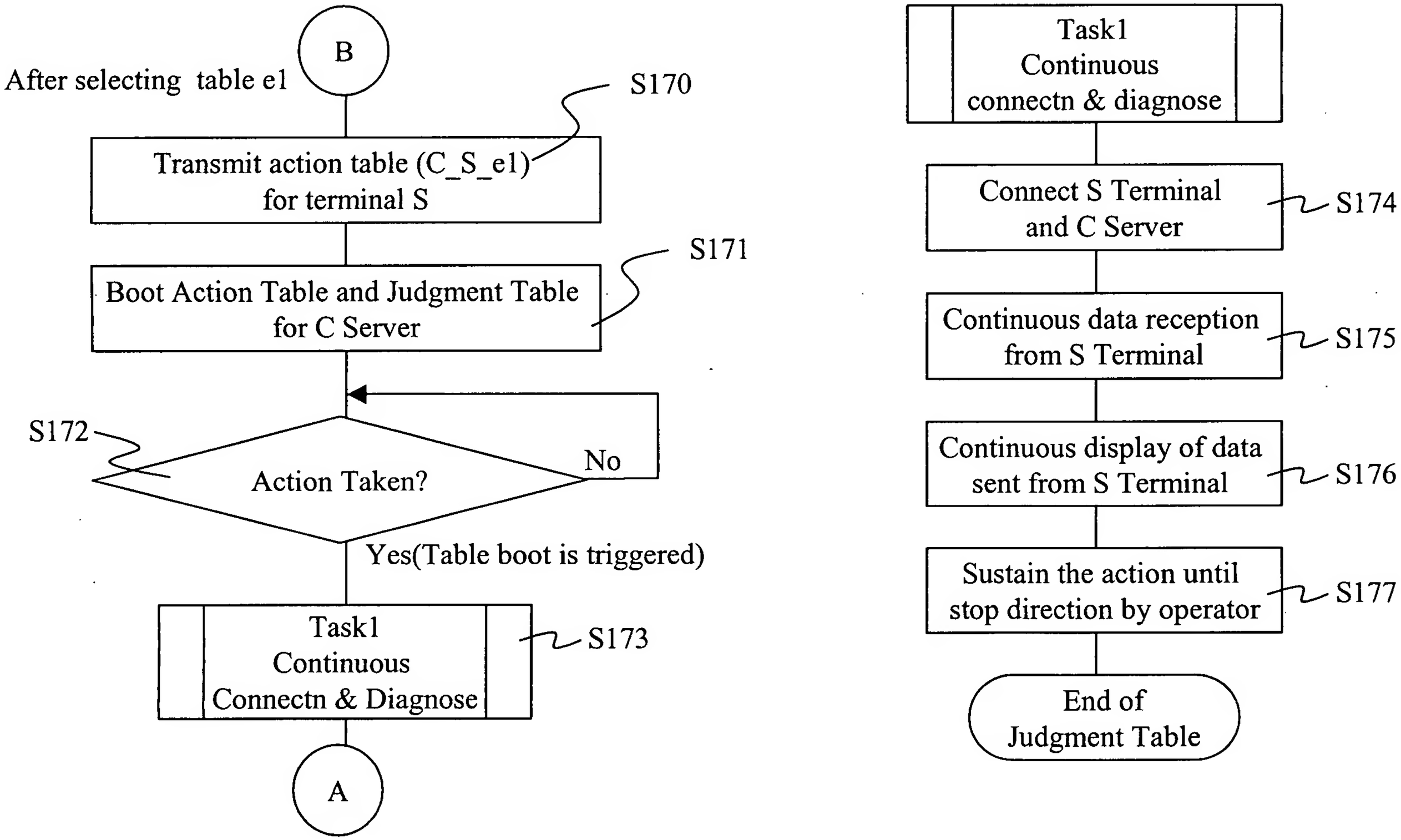

B
After selecting table e1
S170
Transmit action table (C_S_e1) for terminal S
S171
Boot Action Table and Judgment Table for C Server
S172
Action Taken?
No
Yes(Table boot is triggered)
Task1 Continuous Connectn & Diagnose
S173
A
Task1 Continuous connectn & diagnose
Connect S Terminal and C Server
S174
Continuous data reception from S Terminal
S175
Continuous display of data sent from S Terminal
S176
Sustain the action until stop direction by operator
S177
End of Judgment Table

Fig.14

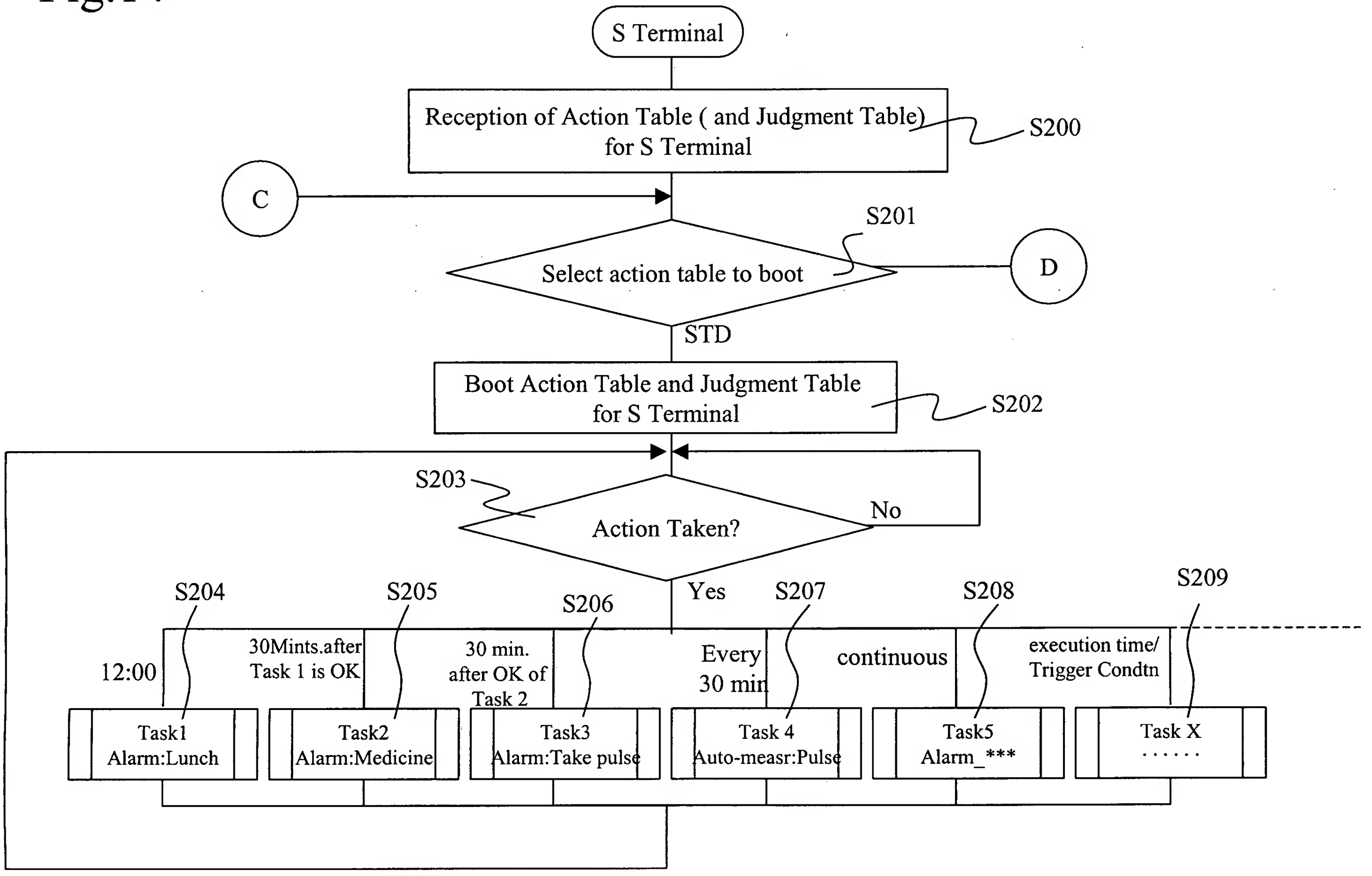
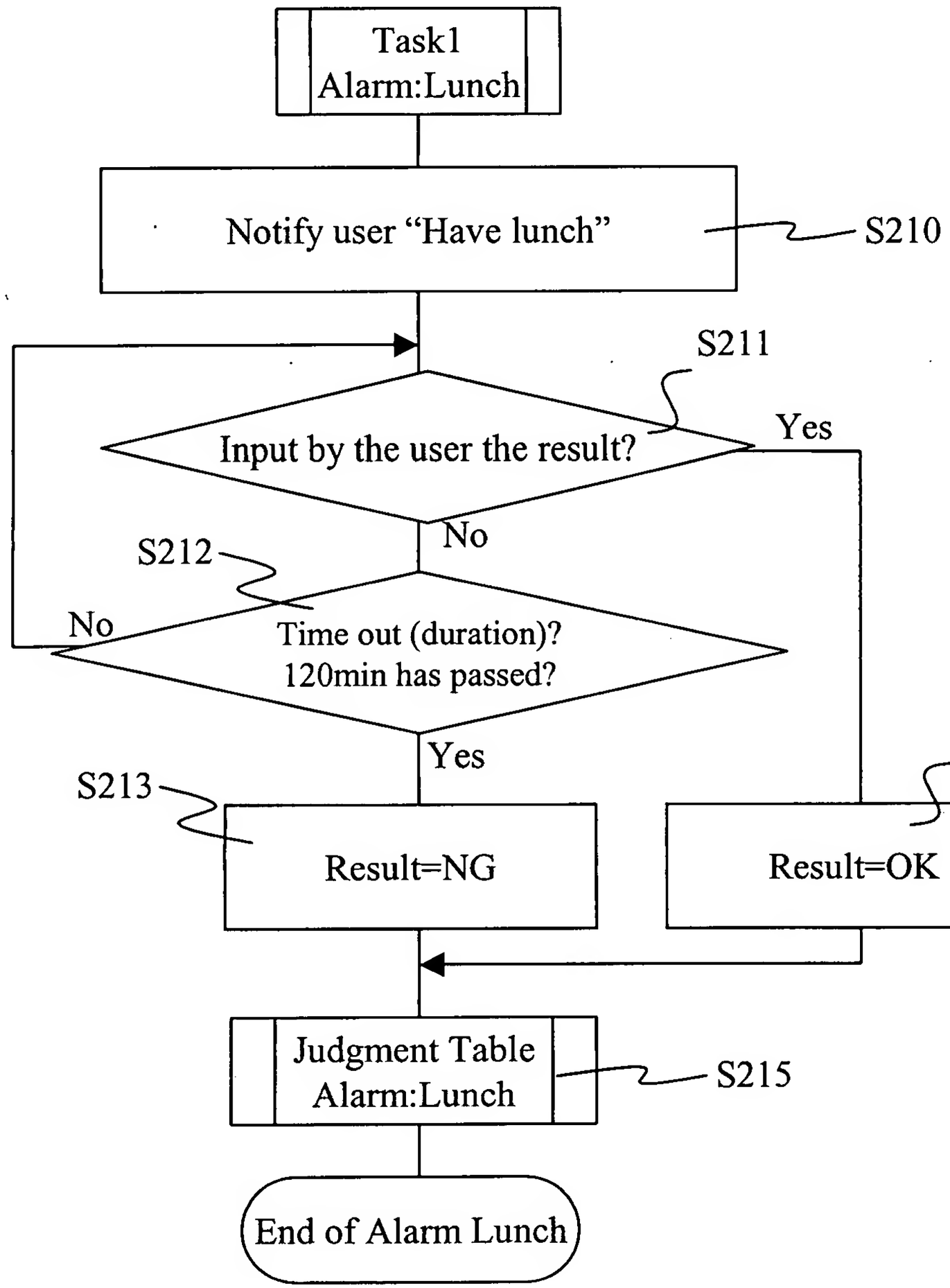

S Terminal
Reception of Action Table (and Judgment Table) for S Terminal
S200
C
S201
Select action table to boot
D
STD
Boot Action Table and Judgment Table for S Terminal
S202
S203
Action Taken?
No
Yes
S204
S205
S206
S207
S208
S209
12:00
30Mints.after Task 1 is OK
30 min. after OK of Task 2
Every 30 min
continuous
execution time/ Trigger Condtn
Task1 Alarm:Lunch
Task2 Alarm:Medicine
Task3 Alarm:Take pulse
Task 4 Auto-measr:Pulse
Task5 Alarm_***
Task X
. . . . . .

Fig15


Task1
Alarm:Lunch
Notify user "Have lunch"
S210
S211
Input by the user the result?
Yes
No
S212
Time out (duration)?
120min has passed?
No
Yes
S213
Result=NG
S214
Result=OK
Judgment Table
Alarm:Lunch
S215
End of Alarm Lunch

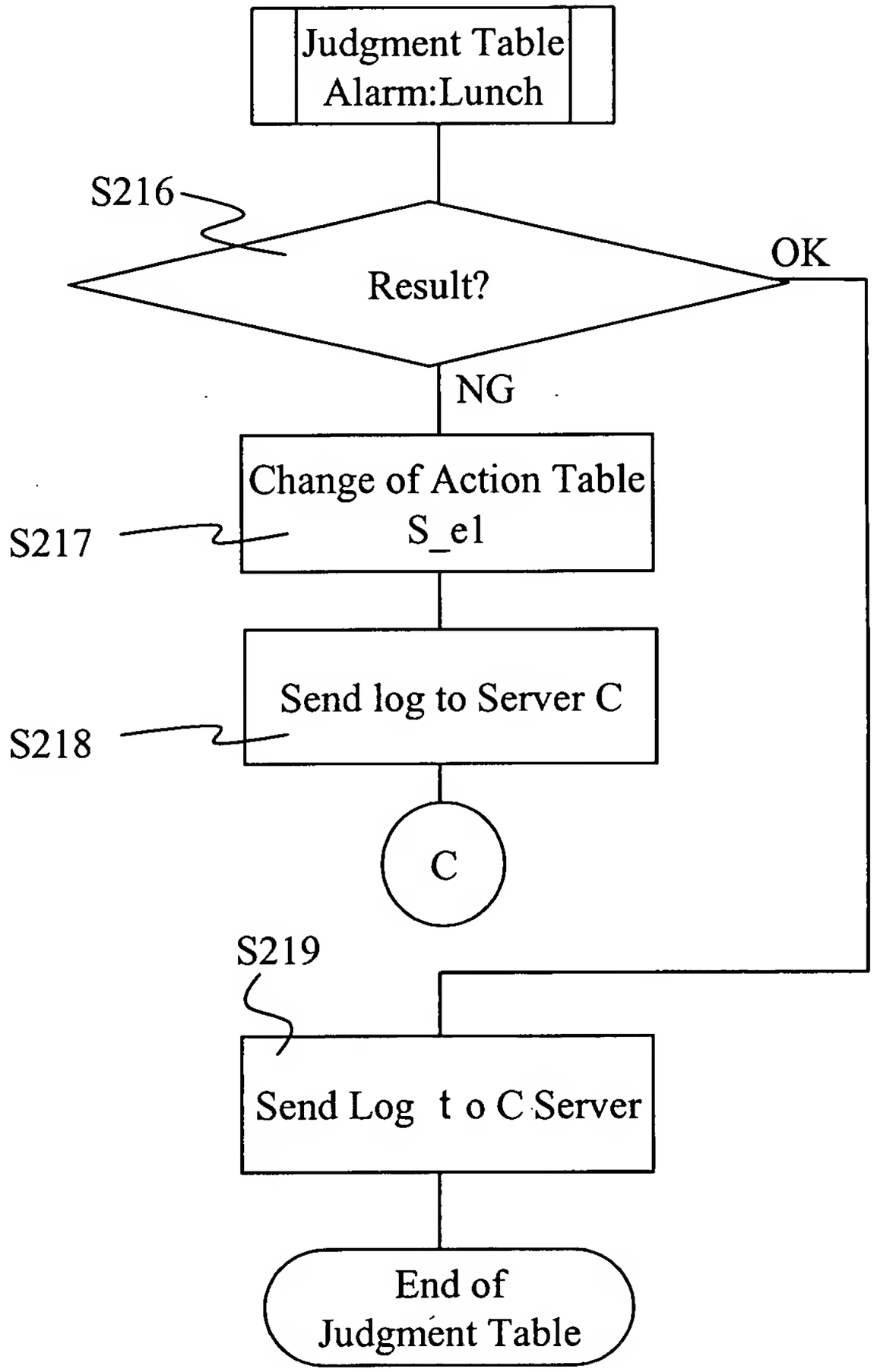
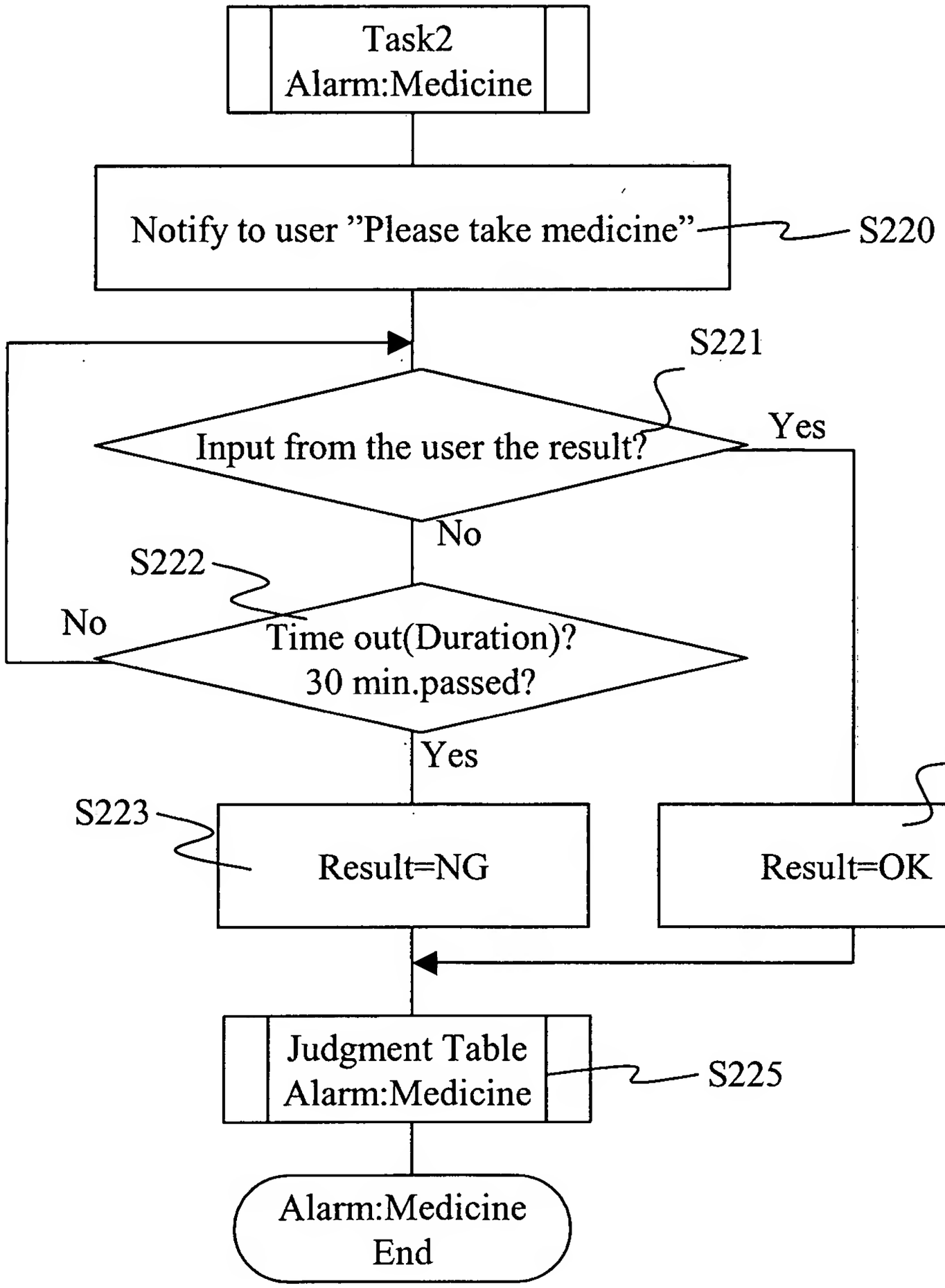

Judgment Table
Alarm:Lunch
S216
Result?
OK
NG
Change of Action Table
S_e1
S217
Send log to Server C
S218
C
S219
Send Log t o C Server
End of
Judgment Table

Fig.16


Task2
Alarm:Medicine
Notify to user "Please take medicine"
S220
S221
Input from the user the result?
Yes
No
S222
Time out(Duration)?
30 min.passed?
No
Yes
S223
Result=NG
S224
Result=OK
Judgment Table
Alarm:Medicine
S225
Alarm:Medicine
End

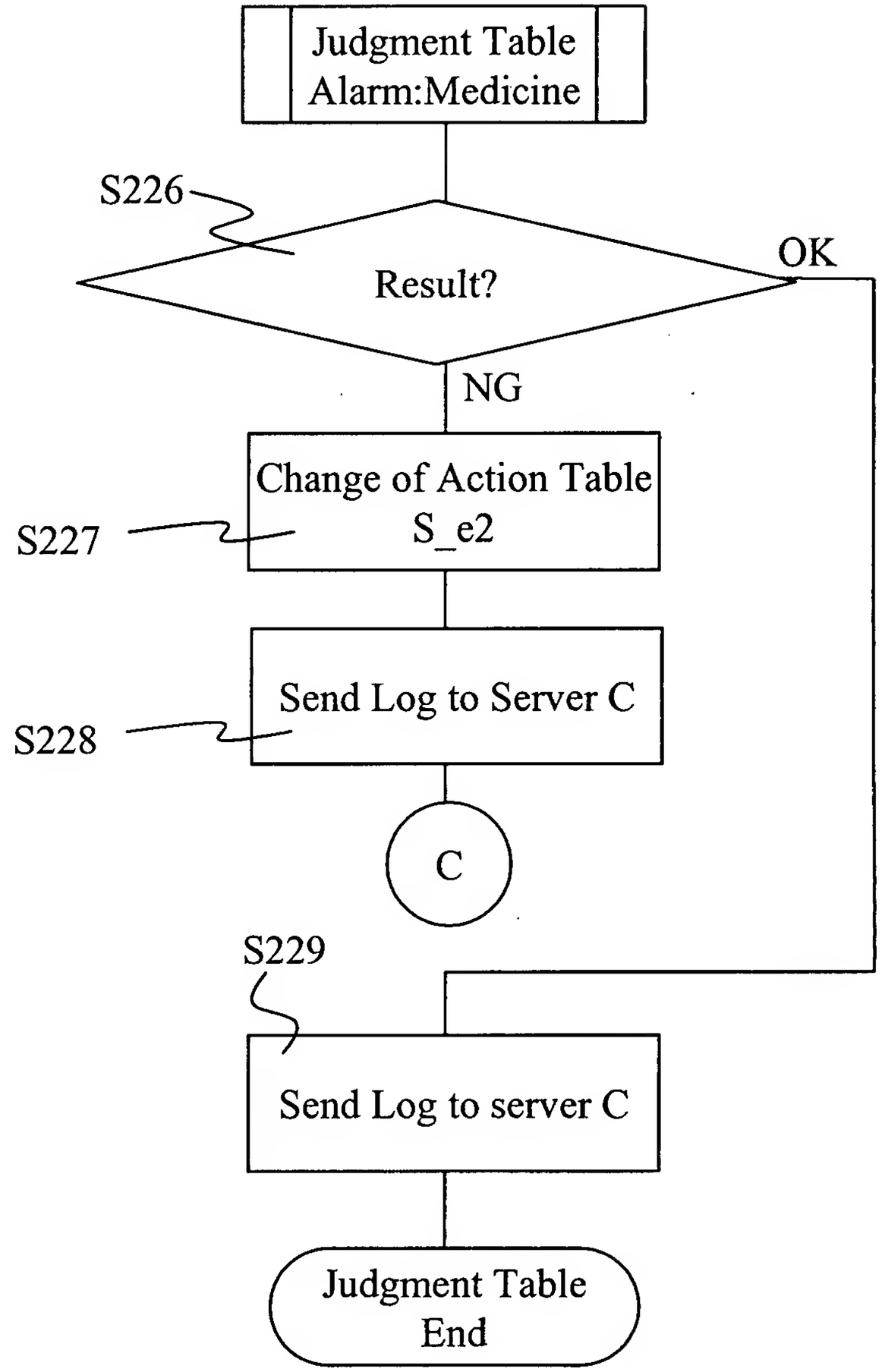

Judgment Table
Alarm:Medicine
S226
Result?
OK
NG
Change of Action Table
S_e2
S227
Send Log to Server C
S228
C
S229
Send Log to server C
Judgment Table
End

Fig.17

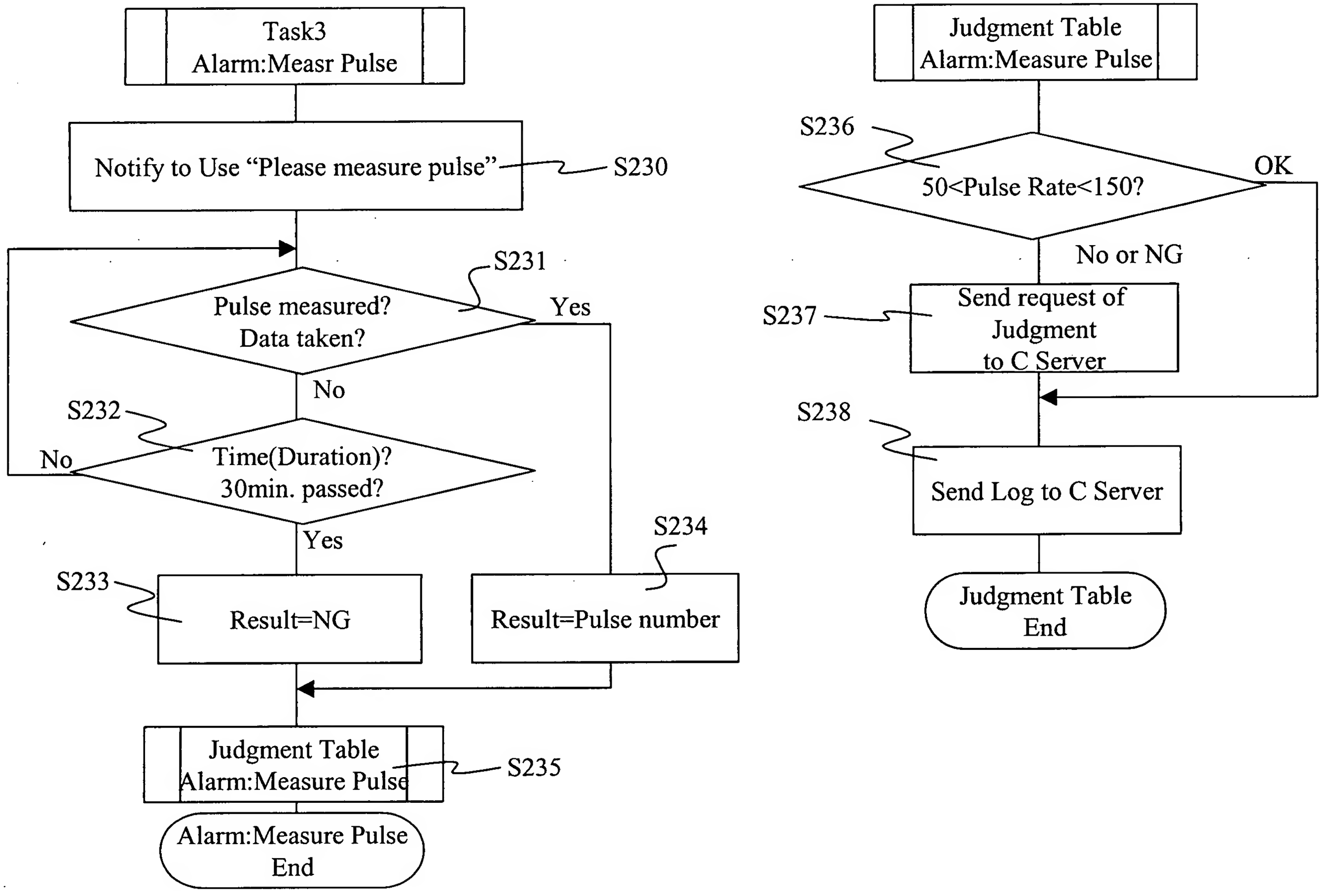

Task3
Alarm:Measr Pulse
Notify to Use "Please measure pulse"
S230
S231
Pulse measured?
Data taken?
Yes
No
S232
No
Time(Duration)?
30min. passed?
Yes
S233
Result=NG
S234
Result=Pulse number
Judgment Table
Alarm:Measure Pulse
S235
Alarm:Measure Pulse
End
Judgment Table
Alarm:Measure Pulse
S236
50<Pulse Rate<150?
OK
No or NG
S237
Send request of
Judgment
to C Server
S238
Send Log to C Server
Judgment Table
End

Fig.18

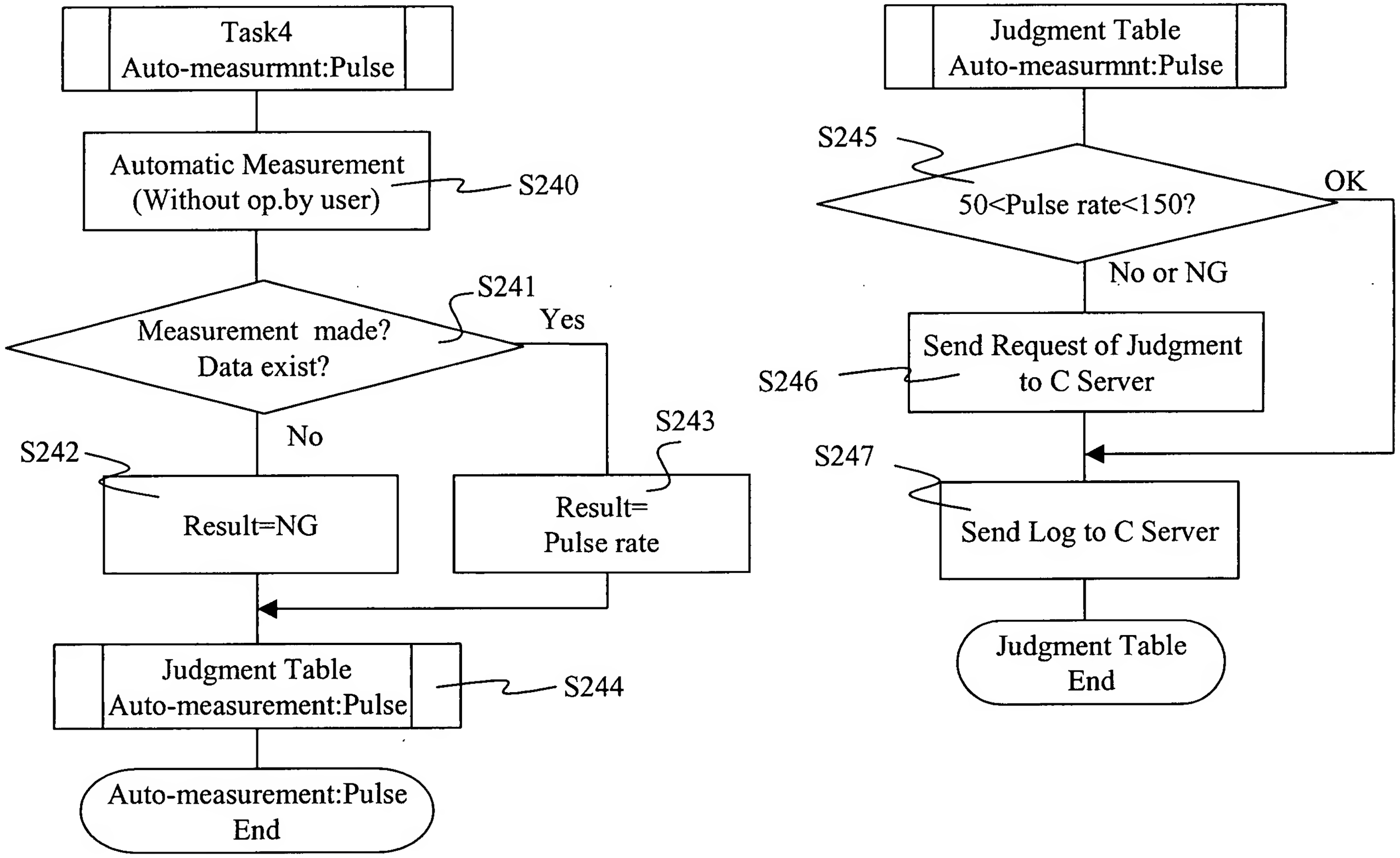

Task4
Auto-measurmnt:Pulse
Automatic Measurement
(Without op.by user)
S240
S241
Measurement made?
Data exist?
Yes
No
S242
Result=NG
S243
Result=
Pulse rate
Judgment Table
Auto-measurmnt:Pulse
S244
Auto-measurement:Pulse
End
Judgment Table
Auto-measurmnt:Pulse
S245
50<Pulse rate<150?
OK
No or NG
S246
Send Request of Judgment
to C Server
S247
Send Log to C Server
Judgment Table
End

Fig.19

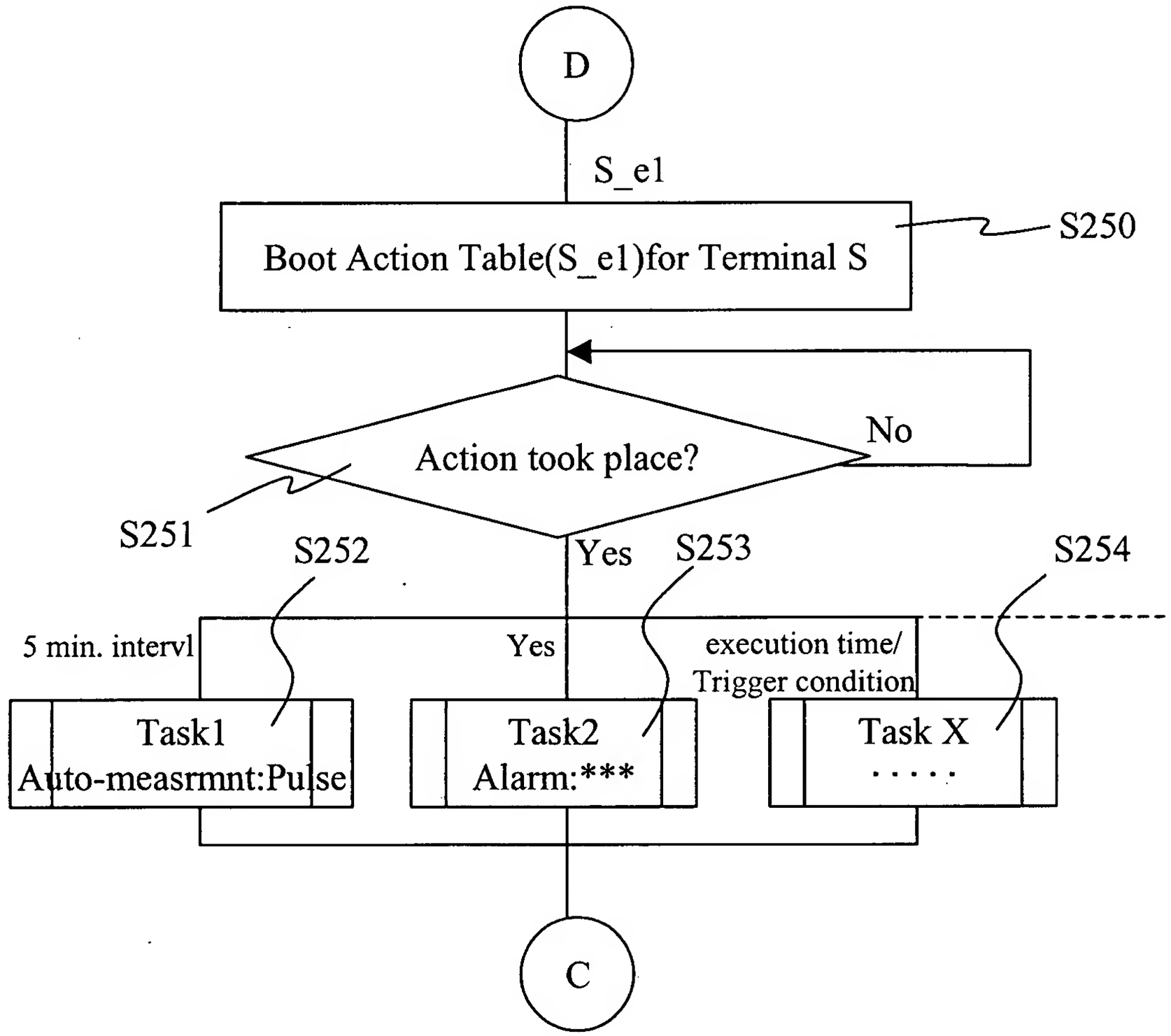

D
S_e1
Boot Action Table(S_e1)for Terminal S
S250
Action took place?
No
S251
Yes
S252
S253
S254
5 min. intervl
Yes
execution time/
Trigger condition
Task1
Auto-measrmnt:Pulse
Task2
Alarm:***
Task X
. . . . .
C

Fig.20

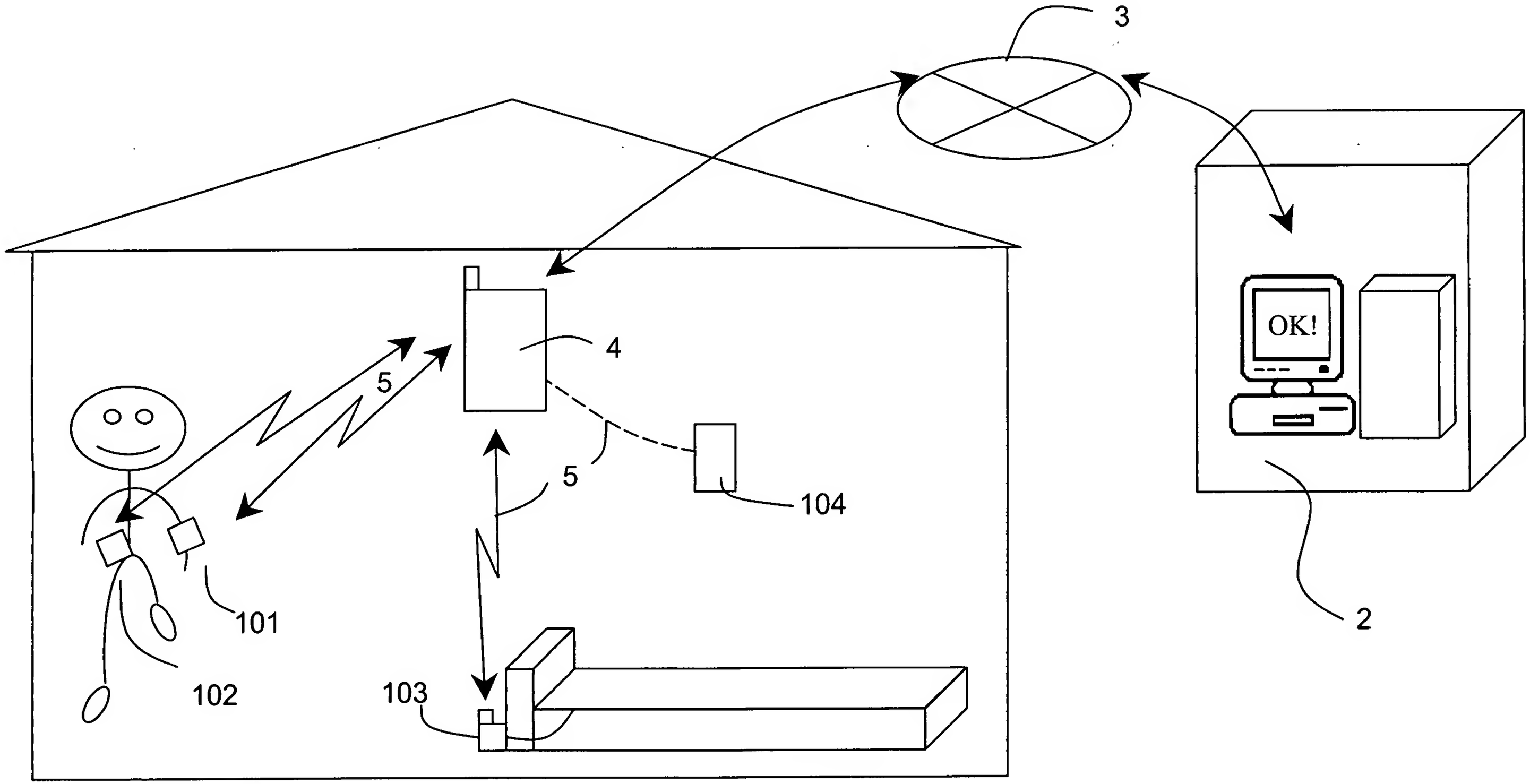


Fig.21

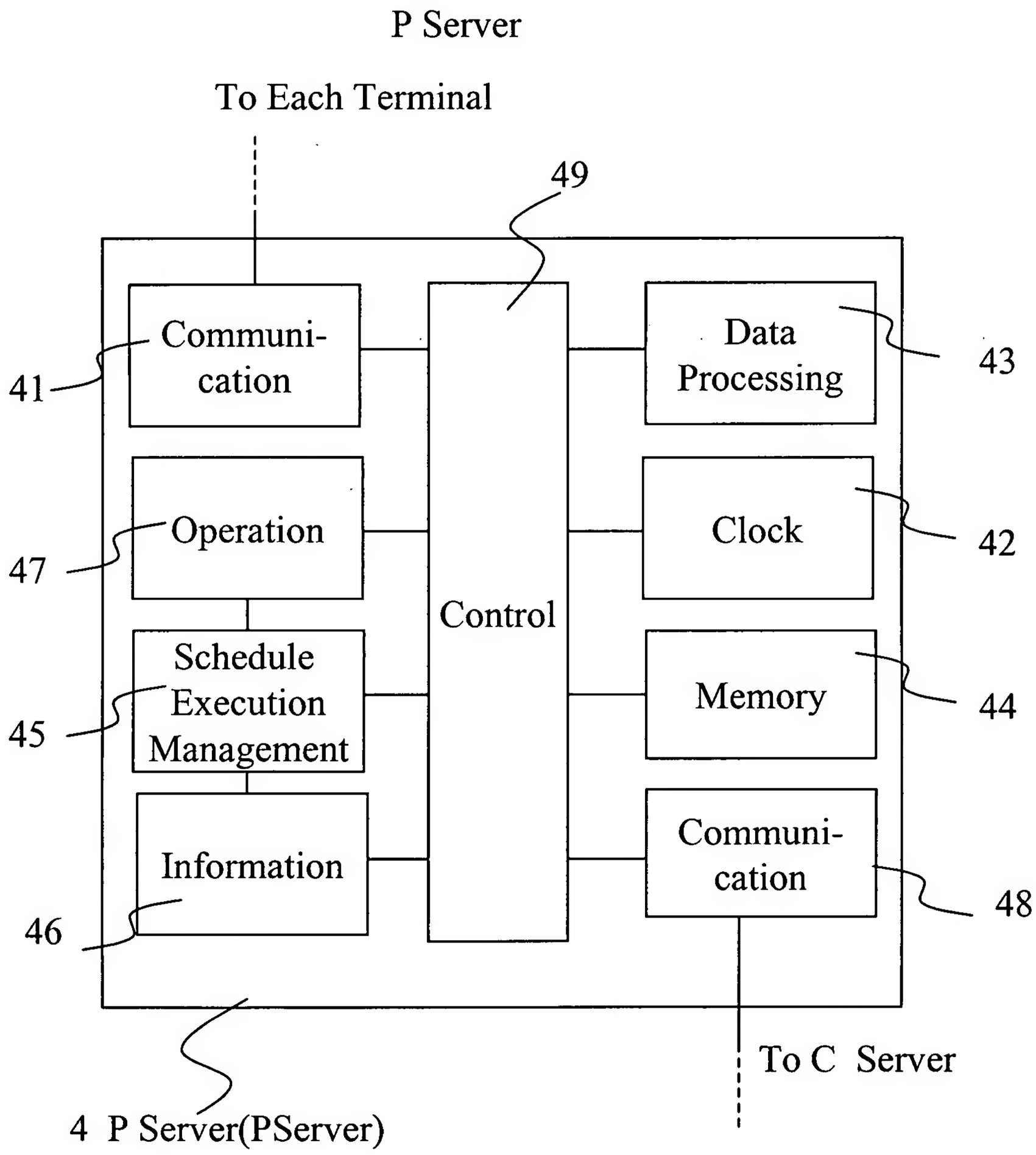
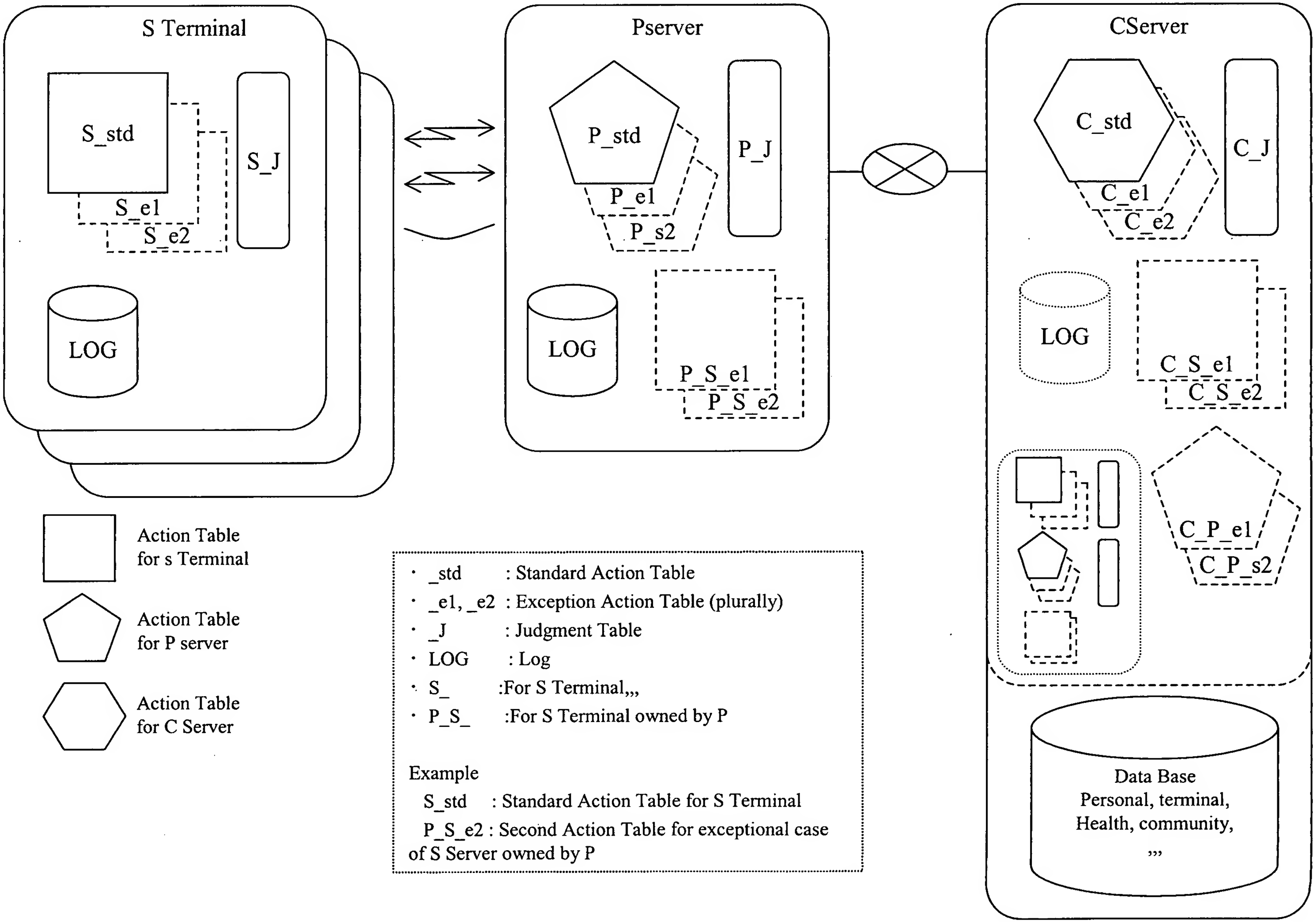

P Server
To Each Terminal
49
Communi-
cation
41
Data
Processing
43
Operation
47
Clock
42
Control
Schedule
Execution
Management
45
Memory
44
Information
46
Communi-
cation
48
To C Server
4 P Server(PServer)

Fig.22



Action Table for s Terminal

Action Table for P server

Action Table for C Server

- _std : Standard Action Table
- _e1, _e2 : Exception Action Table (plurally)
- _J : Judgment Table
- LOG : Log
- S_ :For S Terminal,,,
- P_S_ :For S Terminal owned by P

Example

S_std : Standard Action Table for S Terminal

P_S_e2 : Second Action Table for exceptional case of S Server owned by P

Fig.23

C server

- Accumulation and management of Living Body Information
  (Time Information, Kind Information of S Termnl, S Termnl ID, Version Info of Appl., User ID, Collected Data,,,)
- Management of P Server and S Terminal
  (P Server ID, Kind Info of S Terminal, S Terminal ID, Version Info. Of Appli., User ID,,,)
- User Management
  (Registration, Update, Erase,,,,)
- Operator Management
  (Registration, Update, Erase,,,)
- Display, Report
  (User ID. Duration…of, Display result of search, Report upon the result of action,,,)
- Data Search and Download
  (User ID, Duration in search of,,,)
- Execution of Action and Judgment based on Action Table
  (Update Action Table regularly, when some condtn met, or by manual oprtion. Judgment after assessing disease, gender,area,,,,)
- Action Management according to Action Table
  (Management of bi-direction comms. between User, S Terminal, P Server, C Server, Operator, Doctor, Third Party,,,)
- Make a report
  (Utilization, Equipment condition,,,,)

Distribution of Assessment /Judgment

P Server

- Temporary storage of living body information
  (Time info, Kind info of S Term. S Term.ID, Appl. Version, User ID, Collected Data,,,)
- Management of S Terminal
  (Store Terminal ID)
- Management of User
  (Store user ID)
- Execution of Action and Judgment based on Action Table, and Judgment Table
  (Frequent updating info from S term. Assess. & Judg. from multi.terminl.)
- Display, Report
  (Report items according to action table)

Fig.24

Uer_ID,S Terminal,STD

Task No.	Trmnl I D	execution Time /trig. Condition	Action	Duration	Execution result
1	UDE	10:00	Alarm_Check Exercise_ Start exercise. How is condition?	10	Condition (5,4,3,2,1)/NG
2	UDE	After Task No1 finished	Alarm: Display	Until P Judg. Of Cond.	-
3	UDE	PJudg_Cond.(5,4,3,2)	Alarm_ Start excercise	1	-
4	UDE	PJudg(Cond.5,4,3,2) Every min.	Auto-meas:Pulse_Excrcs(5,4,3,2)	Untill P Judg. of end of execise.	DATA/NG
5	UDE	PJudg._End of Exec.	Alarm_ Thank you. Finish exercise	1	-
6	UDE	Pjudg._Cond(1)	Alarm_ Take a rest today. Operator will call you.	10	-
7	UDE	Pjudg._Cond.(NG)	Alarm_ Operator will call.	10	-
101	MM	PJudg_Cond.(5,4,3,2)	Alarm_ Start Exercise	1	-
102	MM	PJudg_Cond.5,4,3,2)	Auto-measrm_action_ Exercise(5,4,3,2)	Untill exercise amount to (5,4,3,2)	DATA/NG
103	MM	PJudg_End of Exercise	Alarm_ Finish exercise. Thank you.	1	-
…	…	…	…	…	…

Judgment Table

Action	Execution result	…Judgment
Alarm_Confirm	Cond.(5,4)	Display_You look Healthy. Wait for a moment. Transmit log_P Request Judg_P
	Cond.(3)	Display_Wait for a moment Transmit log_P Request Judg_P
	Cond.(2,1)	DisplayAre you OK? Wait for a moment Transmit log_P Request Judg_P
	NG	Transmit log_P Request Judg_P
Auto-measr_Pulse_Exercise	DATA:Norml	DATA Store Transmit log after exercise_P
	DATA:Abnoml or NG	Transmit log_P Request Judg_P
Auto-measure_Act_Exercise	DATA: Total exercise amount to (5,4,3,2)	Transmit log_P Request Judg_P
	DATA:NG	Transmit log_P Request judge_P
…	…	…

Fig25

P Server,STD

Task No.	Execution time/ trig. condtn	Action	Duration	Execution result
1	*	Store	-	OK/NG
2	10:00/ 16:00/ 22:00	Send log_C	-	OK/NG
3	*	Receive requ	-	To judg. table
…	…	…	…	…

Judgment Table

Action	Execution result	…Judgment
Store	OK	-
	NG	Retry
Send log_C	OK	-
	NG	Retry
Receive request	<Alarm:Check for exrcs>	
	~~· Check log of other terminl Cond.=Norml/good~~	PJudg_Cond.(5,4,3,2,1,NG)=Cond.(5,4,3,2,1,NG)
	Condition=Mediocre	PJudg_Cond(4,3,2)=Cond(5,4,3) PJudg._Cond(1)=Cond.(2)orCond.(1) PJudg._Cond.(NG)=Cond.(NG)
	Condition=Bad	PJudg_Cond(3,2)=Cond(5,4) PJudg_Cod(1)=Cond(3)orCond(2)orCon(1) PJudg_Cond(NG)=Cond(NG)
	· PJudg_Cond( )Transmt_S	-
	· PJudg_Cond(1)or PJudg_Cond(NG)	Transmit log_C Request judge_C
	<Auto-meas_pul_excse>	
	· Check log of other terml Cond=Norm/good	-
	Cond=Medcr/bad	Transmit log_C Request judge_C
	<Auto-Measrm_Actn_Exec>	
	· DATA: Total Execs amount to (5,4,3,2)	PJudg_End of execs_Transmit_S
	· DATA: NG	Transmit log_C Request judgment_C
…	…	…

Fig.26

C Server,STD

Task No.	Execution time/ trig. condtn	Action	Duration	Execution result
1	*	Store	-	OK/NG
2	*	Transmit condtn_P	-	OK/NG
3	*	Transmit condtn_S	-	OK/NG
4	24:00	Diagnose	-	Condtn
3	*	Receive request	-	To judgment table
4	1st day of mo.	Make a report		OK/NG
…	…	…	…	…

C Server,C_e1

Task No.	Execution time/ trig. condtn	Action	Duration	Execution result
1	Contnus	Continual connection with P serverl of a particular user & continl diagnose	20	DATA
…	…	…	…	…

C Server,C_P_e1

Task No.	Execution time/ trig. condtn	Action	Duration	Execution result
1	Continual	Continual connection with S Termnl of a particular user & continl diagnose	20	DATA
…	…	…	…	…

C Server, Uer_ID,C_S_e1

Task No.	Termnl ID	Execution time/ trig. condtn	Action	Duration	Execution result
1	UDE	Continuous	Auto-measrmnt_Pulse	-	DATA
2	UDE	Continuous	Alarm_ I'ill call right away!		
…	…	…	…	…	…

Fig.27

Action	Execution result	…Judgment
Store	OK	-
	NG	Retry
Transmit condition _P	OK	-
	NG	Retry
Transmit condition_S	OK	-
	NG	Retry
Diagnose	<Condition Calculation>	
	· Check log of each user Cond. = Good Cond. = Fair Cond. = Normal	Store result of diagnose
	Cond. = Medicre Cond. = Bad	Store result of diagnose Request to call operator
Receive request	<Alarm_check for Execs>	
	· Check log of each user	Store result of diagnose Request to call operator Display the result of checking the log. Change of action table(C_e1, C_P_e1, C_S_e1)
	<Aut-measr_Pulse_eerise>	
	· Check log of each user	Store result of diagnose Request to call operator Display the result of checking the log. Change of action table (C_e1, C_P_e1, C_S_e1)
	<Aut-measr_acti_n_excecs>	
	· Check log of each user	Store result of diagnose Request to call operator Display the result of checking the log. Change of action table (C_e1, C_P_e1, C_S_e1)
Make a report	OK	-
	NG	Retry
…	• • •	• • •

Fig.28

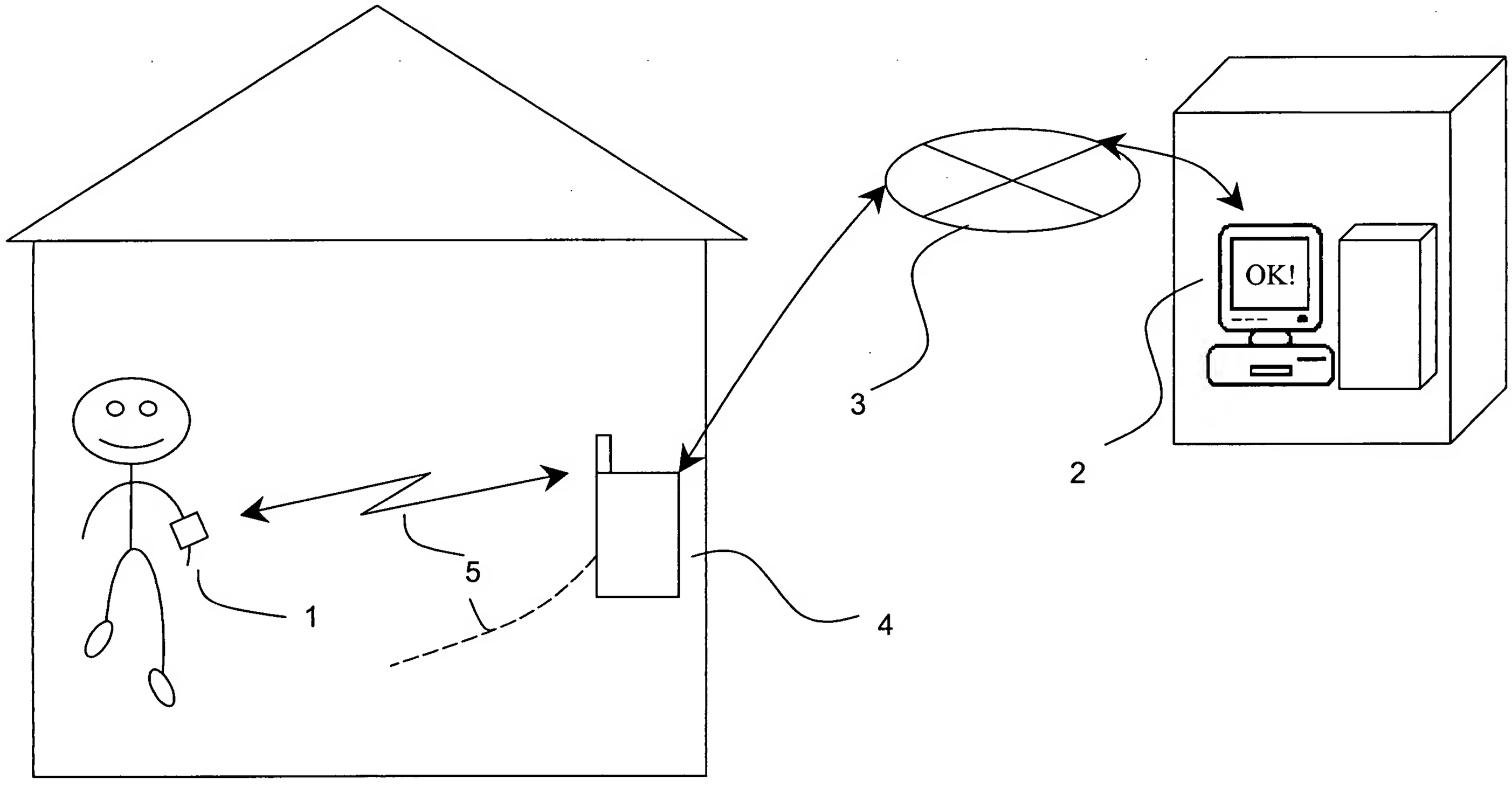


Fig.29

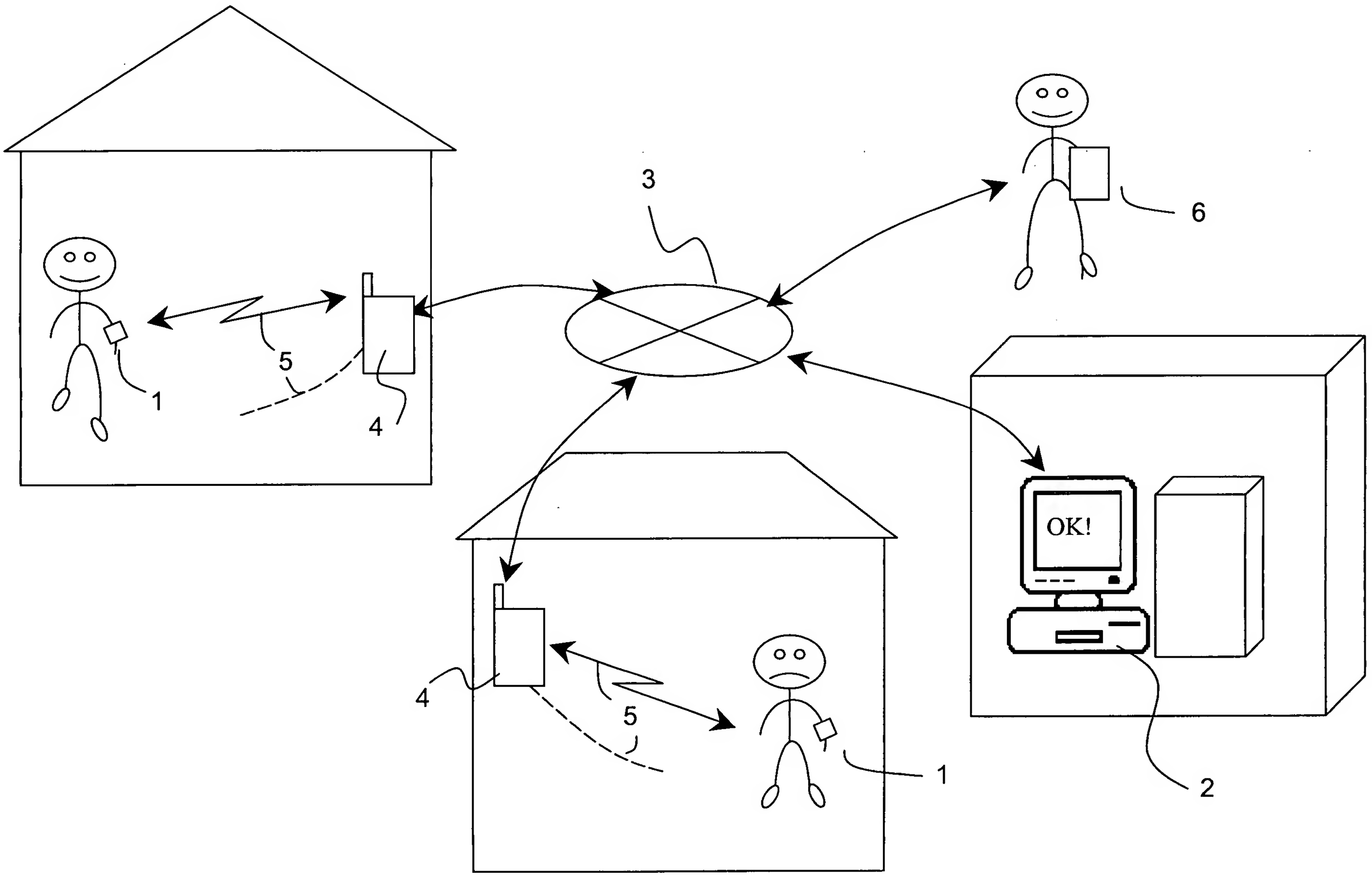


Fig.30

No	action	Schedule-1	Reslt-1	Schedule-2	Reslt-2	Schedule-3	Reslt-3	Schedule-4	Reslt-4
1	Time of measuring pulse beat	6:00	6:00						
	# of pulse beat? Normal from 40 to180 bpm		61						
2	Time of measuring blood sugar	7:30	7:45	a					
	Normal? Normal range from80 to120 mg/dL		85						
3	Have a breakfast	8:00	**8:15**		b				
4	Take medication	8:30		8:45					
5	Time of measuring blood sugar after meal	10:00		10:15	10:20				
	Values? Normal range from100 to140 mg/dL				123				
6	Time of measuring pulse beat	11:00		11:00	11:00				
	# of pulse beat? Normal from 40 to 180 bpm				107				
7	Time of measuring blood sugar	11:30		11:30	11:40				
	Values? Normal range from 80 to 120 mg/dL				90	d			
8	Have a lunch	12:00	c	12:00	**12:28**				
9	Take medication	12:30		12:30		12:58	13:05		
10	Time of measuring blood sugar after meal	14:00		14:00	c	14:28	15:10		
	Values? Normal range from 100 to 140 mg/dL						133		
11	Time of measuring pulse beat	16:00		16:00		16:00	16:00		
	# of pulse beat? Normal from 40 to 180 bpm						**200**	e	

Fig.31

Action	Execution result	Judgment
Measuring pulse beat	From 40 to 80 bpm	Record measured values
	<40, >180 bpm	Record measured values, notify (terminal,C server) , change of schedule
Measuring blood sugar	From 40 to 80 bpm	Record measured values
	<80, >120 mg/dL	Record measured values, notify (terminal,C server) , change of schedule
Measuring blood sugar	From 100 to 140 mg/dL	Record measured values
	<100, >140 mg/dL	Record measured values, notify (terminal,C server) , change of schedule
Take a meal	Less than 15min.	Record log
	Between 15min.and 30 min.	Record log,change of planned time of action
	More than 30 min. (time out)	Record log , Change table
Take medication	Less than 30 min.	Record log , change of planned time of action
	More than 30 min.	Record log , Change table

Fig.32

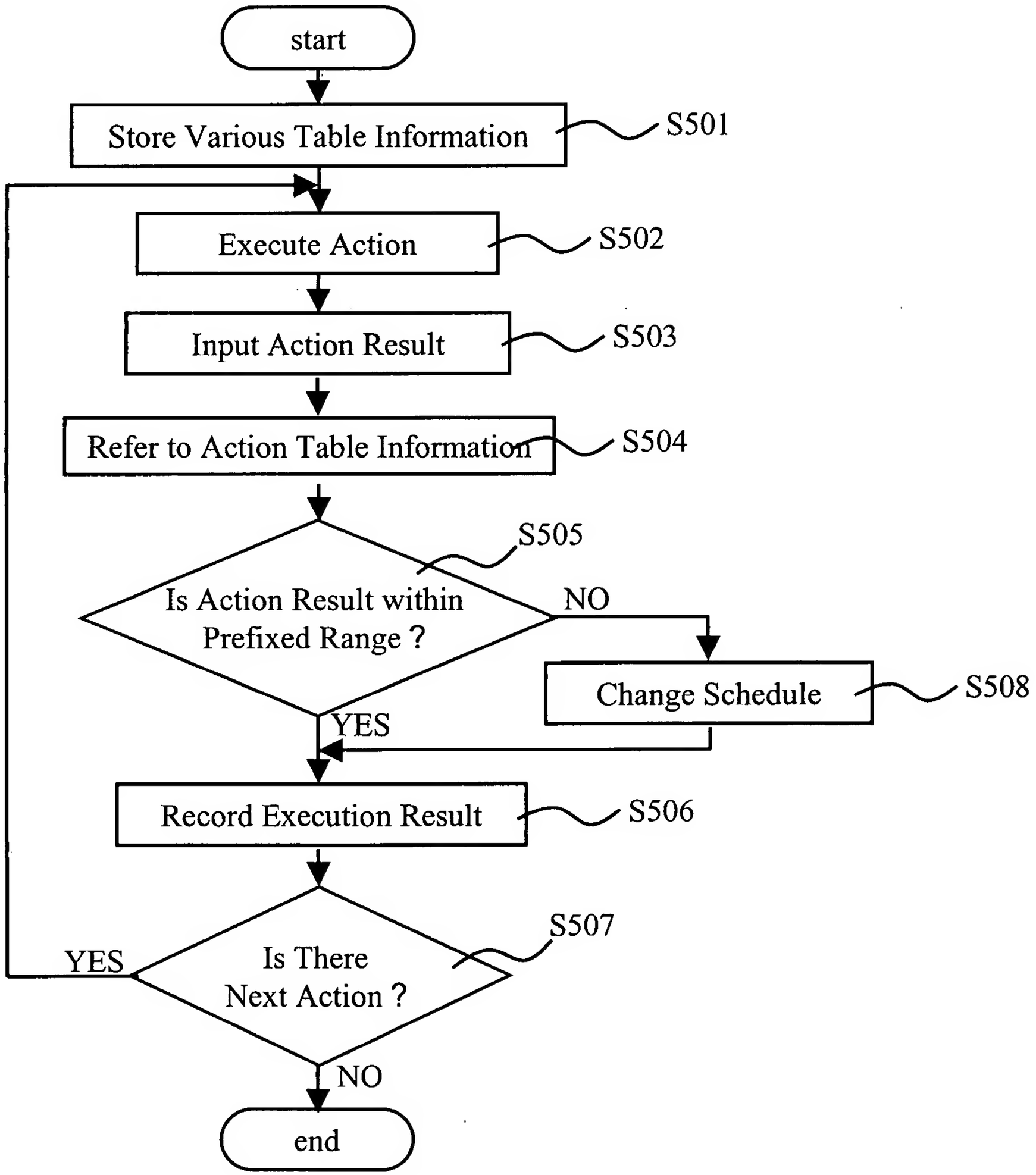

start
Store Various Table Information
S501
Execute Action
S502
Input Action Result
S503
Refer to Action Table Information
S504
S505
Is Action Result within Prefixed Range ?
NO
Change Schedule
S508
YES
Record Execution Result
S506
S507
YES
Is There Next Action ?
NO
end

Fig.33

Exception Action Table Information

	Action	Schedule	Execution Result
1'	Press 「Emergency」 button	Start time of Irregular Schedule (16:01)	16:02
2'	Start pulse beat measurement (every one minute interval)	Start time of Irregular Schedule (16:01)	16:01
	Record pulse beat number		Normal Exec (OK)
3'	Transmit stored data (To C server)	C sever command receiving time	16:16

Fig.34

No	Action	Schedule-1	Reslt-1	Schedule-2	Reslt-2	Schedule-3	Reslt-3	Schedule-4	Reslt-4
12	Have supper	18:00		18:00		18:00	**18:10** ~ a		
13	Take medicine	18:30		18:30		18:30		18:40	18:45
14	Time for blood sugar measurement (after supper)	20:00		20:00		20:00	b ~	20:10	20:20
	Blood sugar value? Normal range from 100 to140 mg/dL								120
15	Time for pulse beat measurement	21:00		21:00		21:00		21:00	21:00
	# of pulse? Normal range from 40 to 180 bpm								60

Fig.35

Schedule Information

Action	3/10	Execution result	3/11	Execution result	3/12	
Start exercise	10:00		10:00		10:00	**Total 50 min.**
Start pulse beat measurement	10:00		10:00		10:00	
Start acceleration measurement	10:00		10:00	**Total 60 min.**	10:00	
Body weight measurement	10:00		10:00		10:00	
Stop exercise	**10:30**	**Consumed calories = 82kcal**	**11:00**	**Consumed calories = 123kcal**	10:50	
Stop pulse beat measurement	10:30		11:00		10:50	
Stop acceleration measurement	11:00		11:00		10:50	

Judgment Table Information

Calories spent (Exec. result)	Next exrcse length (min)
Less than 100kcal	60
100kcal ~ 130kcal	50
130kcal ~ 170kcal	40
More than 170kcal	30

Fig.36

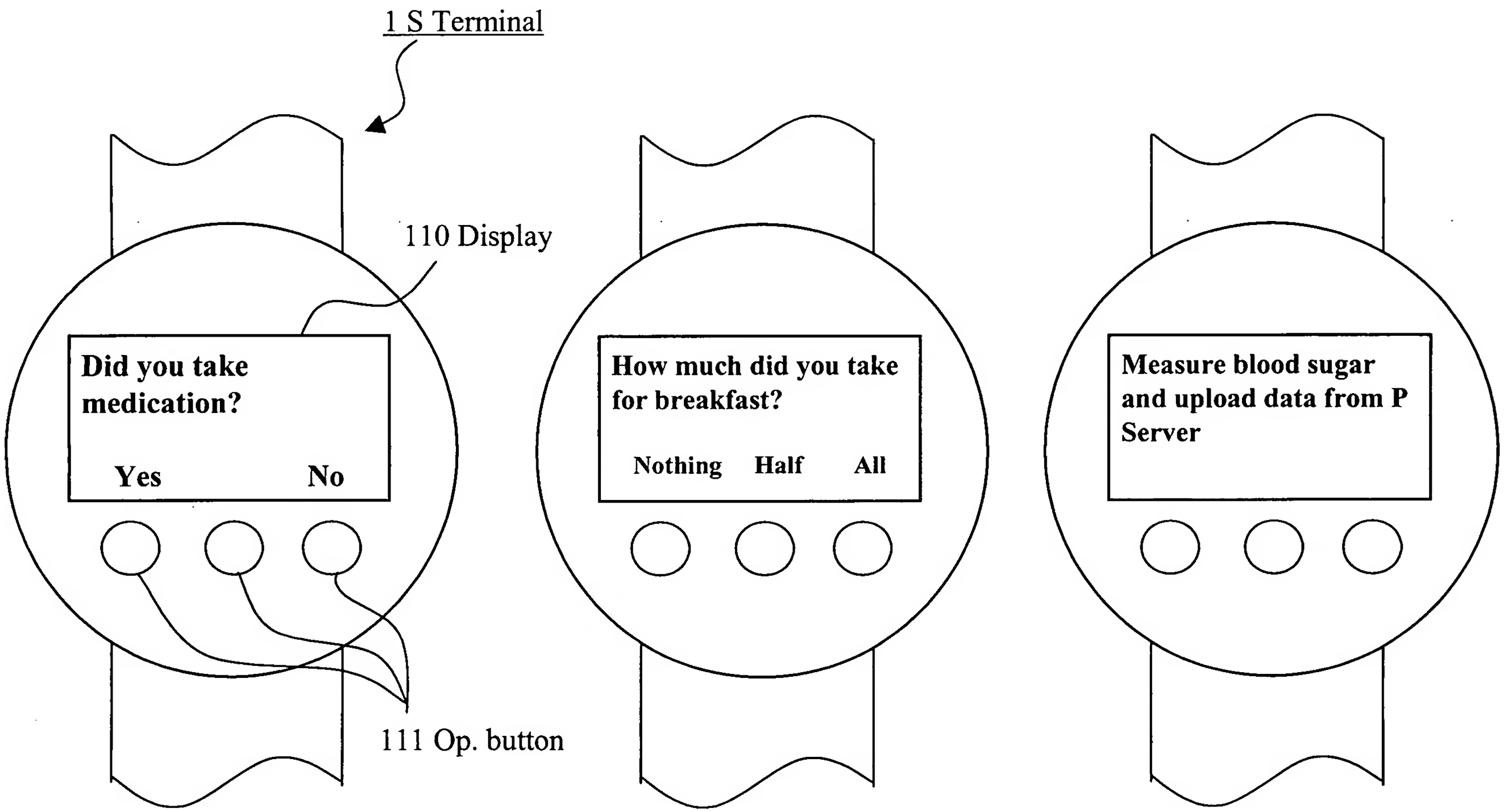
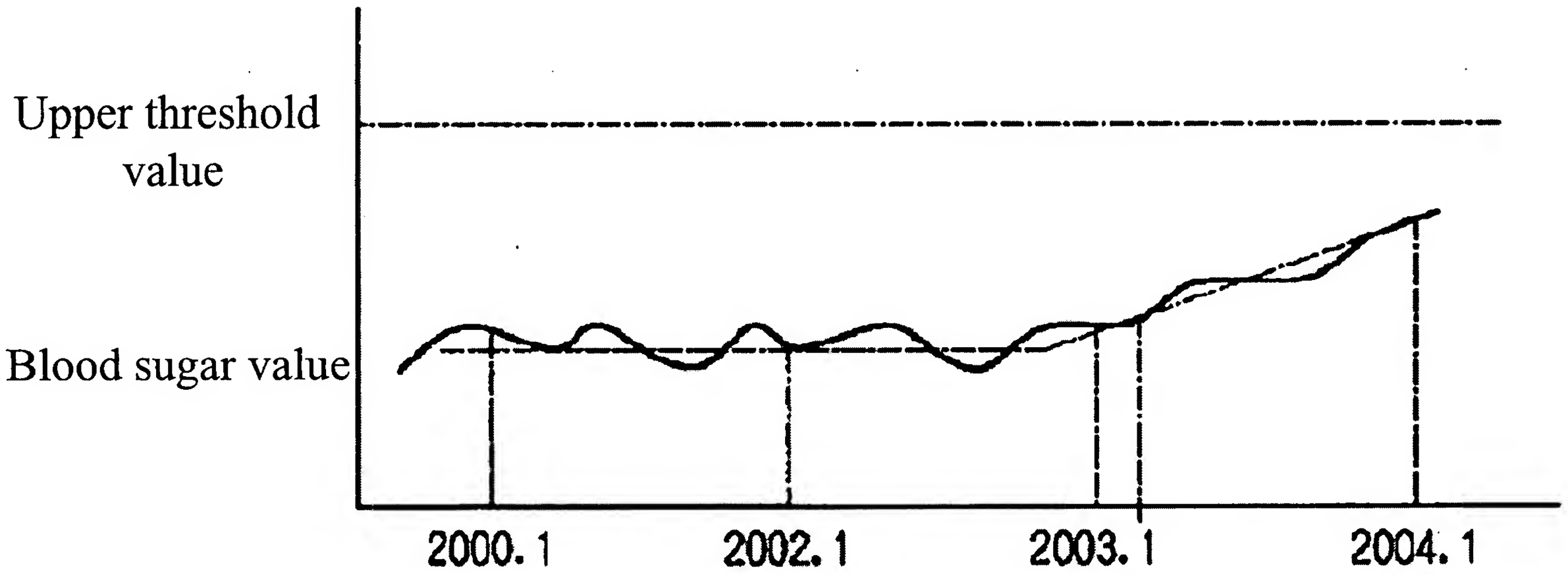

1 S Terminal
110 Display
Did you take medication?
Yes
No
111 Op. button
How much did you take for breakfast?
Nothing
Half
All
Measure blood sugar and upload data from P Server

Fig.37


Upper threshold value
Blood sugar value
2000. 1
2002. 1
2003. 1
2004. 1